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ABSTRACT

A competency-based, introductory social science course for college students is described. Objectives of the manual are twofold--first, to present the complete set of materials which have served as the basis of a one semester social sciences course at the University of Louisville over three years, and, second, to offer suggestions regarding objectives, research methods, evaluation, and teaching methods to college teachers as they develop and implement social science courses. Nineteen activities are described, including defining social sciences, identifying major questions and research interests, learning basic descriptive statistics, constructing and administering a survey, and evaluating a research experience. For each activity, a variety of materials is presented, including tests, objectives, student handouts, lesson plans, and evaluation criteria. Specific inquiry skills which the learning activities are intended to enhance include acquiring information (learning sources for research in the field, learning vocabulary and key ideas, and learning principal investigators in each social science discipline), producing thematic organization and methods appropriate for research (articulating problem statements, practicing data collection and analysis, and practicing theory development), and utilizing research findings in cultural projects and institutions. The document concludes with a bibliography, a student evaluation inventory, and a glossary of terms. (DB)

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# Introduction to the Social Sciences

# Teacher's Manual

Mark E. Blum
Stephen D. Spangehl
Co-Directors
Developmental Education Center
University College
University of Louisville
Louisville, Kentucky 40208

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M.E.B.
S.D.S.

June 26, 1979

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# A COMPETENCY-BASED, DEVELOPMENTAL INTRODUCTION TO THE SOCIAL SCIENCES:

# TEACHER'S MANUAL

This manual provides the social sciences instructor with a complete set of materials for the competency-based introductory course (one semester) to the social sciences which has been taught at the University of Louisville over the past three years. Included in the manual, which is designed to guide replication of the course, are the lesson plans of each class activity, the worksheets which guide student study and research, objective tests, and evaluation criteria for determining the mastery of each competency practiced.

The manual consists of nineteen units, each a distinct activity which trains one or more competencies in social science inquiry. A glossary - index of course concepts enables the teacher to track the development of specific competencies over the nineteen units, allowing for greater flexibility in the use of the materials.

## I. THE COMPETENCY-BASED, DEVELOPMENTAL APPROACH TO COLLEGE INSTRUCTION

Competency-based education in the liberal arts college is a recent response of undergraduate educators to meet the modern demand that the goals, methods, and outcomes of any educational experience be explicit and assessable (Woditsch, 1977; Blum and Spangehl, 1978; Grant et. al., 1979).

Transforming traditional courses in academic ideas and inquiry in the humanities, natural sciences, and social sciences into explicit competency-based courses is a two-stage process. The first stage is a rational analysis of what is taught in the major divisions of knowledge at the general education and advanced undergraduate levels and articulating this content into a schema of competency objectives and measures which can guide course design. The second stage is to teach such a course and to see how the rationally posited competencies fare in the reality of practice: do they indeed exist? are they assessable? and, what competencies have we forgotten in the design of the course?

This course introducing the social sciences has passed through these two stages of development and the identified competencies have been tracked and assessed in their practice.

Before reviewing the specific competencies trained in this course, it is important to discuss briefly the theoretical framework which led to our particular definition of competencies, i.e., the first stage of rational analysis which made possible the initial course design. The competencies of academic inquiry can be viewed as occurring within three broad procedural domains: knowledge acquisition, knowledge production, and knowledge utilization.

The acquisition of knowledge in the social sciences, humanities, or natural sciences includes procedures which are common to each of these major divisions of human knowledge. Acquiring knowledge involves the methods of inquiry developed by the human species over its history of experience in the world. The human make-up of abilities and faculties has determined the essential elements of the acquisition stage of knowledge development; man uses language to frame questions, man uses his senses and motility in the conduct of inquiry to establish facts, man has a memory and other storehouses of information which provide a background of knowledge acquisition which are

part of every domain of science. The list of acquisition methods on the following page can be seen as belonging to any adequate education in the natural sciences, humanities, or social sciences. These methods of knowledge acquisition are the backbone of a developmental education within the discipline in which they are practiced.

The production of knowledge in the major scientific fields, which includes humanities, involves again, those methods which mankind has developed to suit his organic makeup and the conditions of life on earth. Many must be able to use an individual set of cognitive and physical tools in any personal search for the solution to a problem and in the establishment of a solution to a problem. Man must learn to translate information about things which he has learned from others into viable tools and procedures which enable him to conduct his search in his immediate surroundings. Moreover, whatever he discovers is evidence or fact only to him until he is able to communicate his results to another in a form that is not only convincing, but capable of being demonstrated yet again to a third party. Objectivity, replicability, cultural utility all depend upon an individual learning how to package and communicate the facts established in a personal search. The truths involved in the human act of producing knowledge now known before are part of the human condition. The imperatives involved in knowledge production, and the methods individuals have developed in culture to establish knowledge and production, as in knowledge acquisition, rely on the nature of the human mind, the human senses, and the contingencies of human motility and life in the world. The list of production methods below may not exhaust the particular methods in any discipline or field, but they suggest the many considerations developmental education brings to the human conduct of knowledge production.

The utilization of knowledge in the social sciences, humanities, and natural sciences varies according to the cultural state of the world in the given epoch. Some fields of knowledge go about making discoveries and are not called upon by the social world to contribute with their knowledge to effecting improvement in the society. I suspect that if we talk about individual investigators in any field, we will see that every person wants to make use of his discoveries, and that this has been true in every epoch. Some men never learn how to implement what they discover in a cultural application that works. The survey below of utilization methods by which knowledge can be implemented for cultural gain is a list of methods which are relevant to the sciences in every discipline. The methods are required, again, because of the nature of the human being and the conditions of life in the world. Certain bases must be touched in any attempt by a science to implement its discoveries in existing cultural systems. Certain skills must be learned by an individual if he would effect use of his discovery among the on-going operations of his fellows.

Examples of the skills which occur within these three broad procedural domains of academic inquiry are:

Acquisition

Acquiring existing information:
...learning sources for research in the field
...learning vocabulary of the field
...learning principle investigators within the field
...learning key ideas within the field
...learning the history of ideas, sources for research, and principle investigators in the field

Acquisition (Cont'd.)

...learning the parameters of the field historically and presently
...learning the forms and styles in which hypotheses, theories, and laws are expressed in the field.

Acquiring the methods for individual search in the field:

...learning the existing perspectives and approaches for developing facts in the field
...learning the forms for articulating problems, hypotheses, theories, and laws appropriate for one's area of research
...learning how to establish a scope of search
...reviewing personal assumptions and search criteria
...learning evaluation methods relevant to search
...learning the methods of data collection, classification, and other organizational modes adequate for actual investigation.

Acquiring the methods of knowledge application and communication (utilization):

...learning how ideas, theories, and laws in the field have been historically used in cultural projects
...learning the current methodological utility of ideas, theories, and laws in the field to present cultural problems
...reviewing the interdisciplinary cooperation of the field with other fields in cultural projects in terms of ideas, methods, and technologies
...isolating tools (methods of inquiry, methods to effect changes, methods to establish purposes) of the discipline which can be used in cultural projects
...learning the customary formats of communication used by the field.

Production

Producing thematic organization for focusing individual search in a field:

...learning to identify thematic interests in a field
...learning to articulate problem statements which will guide and facilitate personal search
...learning how to construct hypotheses which may be evaluated
...learning how to select existing methods of inquiry and data collection, and how to plan an augmentation and innovation in the conduct of inquiry and data collection to accomodate personal search problems
...learning the existing criteria in the field for valid and reliable experimentation.

Producing methods appropriate for the conduct of an individual search:

...practicing the psycho-physical steps in the conduct of experimentation
...practicing the application of data collection categories, measures and other criteria in the midst of experimentation
...learning the models in one's field for theory development and the expression of laws
...practicing theory development on the basis of verified hypotheses.

Producing personal methods of knowledge application and communication (utilization):

...practicing the written and oral communication of facts, hypotheses, theories, and laws in one's field
...develop a genre of expression appropriate and effective for communicating one's area of search and discovery
...practicing demonstration to laymen and professionals in various fields
...identifying areas of culture (people, technology, institutional organization) which might benefit from knowledge of the facts or application of the procedures in your discovery
...refining problem statements and applications of your discoveries adequate for solving the problem statements
...developing plans for implementing solutions in the environment that you wish to affect.

Utilization

Acquiring the established methods and history of cultural implementation of the discoveries of the field and the forms in which knowledge in the field has been communicated:

...survey of the field's history of technologies and its applications
...survey of the individual scientists in the field in terms of their method and style of communicating and demonstrating discoveries.

Producing culturally useful tools and applications based on the discoveries of your search:

...learning to develop tools and applications of experimental discoveries in pilot tests and extensive field tests
...learning the group dynamics and interpersonal skills requisite for adapting personal discoveries to existing systems
...developing the training methods required for schooling others in the use of your tools and knowledge.

Utilizing your discovery in cultural projects and on-going institutions:

...developing a monitoring system for identifying the career of your discovery (took, procedure, conduct) in its use in the project or institution
...developing a modification system for reestablishing the integrity or modifying the integrity of your discovery in its use in the project or institution
...establishing an informational system by which others who use your discovery can inform you of its utility in a language that allows you to refine the existing discovery to meet new problems.

The undergraduate academic experience, as it is currently structured, only emphasizes the procedural skills of knowledge acquisition, and to some degree, knowledge production. The refined training in knowledge production is reserved for specialized graduate training and the competencies of knowledge utilization are usually developed in professional practice. This temporal staggering of training in the three procedural domains results from the

traditional system of post-secondary education, which begins with an introduction to the general ideas of academic knowledge, then gradually guides the student into a highly specialized field in which he will later act as a professional. Developmental education at the post-secondary level seeks a more holistic approach to the acquisition, production, and utilization of knowledge, integrating skills from each procedural domain in the learning process. Developmental approaches rely on experiential learning, which uses projects in the environment to call upon the student's reasoning, decision-making, and implementing abilities, from the outset of his education. Developmentally, the young adult of 17 is ready for the independent inquiry which relies on knowledge acquisition and production. (For more mature students, a growing population in colleges, exercising the competencies of knowledge acquisition, production, and utilization is even more germane to the undergraduate curricula. These adults already use this trichotomy of inquiry procedures in their livelihoods. One must appropriately identify the skills so that the adult can transfer the mental and psycho-physical practices of the world of work to academic pursuits.) If the academic inquiry is guided, and kept simple in its goals and procedures, the student can quickly become a self-motivated seeker of knowledge. Delaying such activity until the junior or senior years, when in a departmental major, has no developmental rationale, only a rationale derived from the traditional practice of generalized lecture courses which lead to honors seminars. We have found that the student does best in the academic world when he begins with the actual conduct of inquiry, and then expands his vocabulary, ideas, and knowledge of the history of a field to complement his initial interest and activity in answering personally formulated problems. By doing research, in simple, guided projects, the student develops a respect and thirst for knowledge that listening solely to lectures, or simply reading, would never give. The educational principle at work is that what you can do well you have an interest in developing more knowledge about. We give the student the chance to succeed at simple research projects, and as a result, the student values academic inquiry and seeks out books, lectures, and further experience in the academic world.

## II. DESCRIPTION OF THE INTRODUCTION TO THE SOCIAL SCIENCES COURSE

The social sciences introduction begins with critical readings of case studies in research so that the student begins to see the major concerns, methods, and specialized vocabulary of sociologists and psychologists. The critical reading is guided by worksheets that focus the student's thinking and response. Research studies which involve both psychologists and sociologists (or other social science fields) on a common problem is preferable; in this manner, one can begin to point out the shared methods among social science disciplines and the differences in interest and procedure. In our materials, we use a study of human crowding. This first phase of the course includes six units of activity (approximately 7 to 9 fifty-minute class sessions).

The second phase of the course is the modelling of inquiry methods generic to all social science disciplines. The student is presented with models of each inquiry method and is given simulated practice in the use of the method. The methods include behavioral observation, survey, cultural analysis, performance testing, physical/artifactual testing, and statistical analysis. Then, the student is given simulated exercise in the formulation of a researchable question and development of a research design that could answer the question. This second phase of the course includes eight units of activity (approximately 9 to 12 fifty-minute class sessions).

The third and final phase of the course is the conduct of an independent research project and communication of the results of the project. This phase of the course allows the student to demonstrate mastery of the concepts and procedures he has already learned. The theme offered the students is to investigate some question that involves the "learning situation." The subject matter is one addressed by educational psychology, but also of interest to sociologists. The "learning situation" is defined as any situation in which a teacher or teachers instruct students. The learning situation can be found among students of any age. The choice of this theme has several benefits:

(1) The student can visit a college classroom in the pursuit of his "learning situation;" this overcomes logistic difficulties that often occur with working people when quasi-experimental projects are recommended.

(2) The theme allows the student to consider his own educational experiences and encourages him to bring a critical eye to the present class.

(3) The theme enables the student to incorporate the six major social science methods of investigation into a manageable, individual project: behavioral observation, surveys, performance testing, physical/artifactual testing, cultural analysis, and statistical analysis can all be used in the study of the "learning situation."

(4) The predictable elements of this theme assure that although each student may have a different question or proposition regarding the learning situation, enough elements will be held in common to stimulate comparisons in class discussion while the outside project is in progress, and allow group sharing of methodological insights and factual discoveries.

The outside project is guided by worksheets and these same worksheets allow the teacher to monitor and intervene in the independent project. Class time is spent reviewing the progress of the students in each phase of the research. The final paper by each student which presents results is also structured with the help of a worksheet guide.

Students review their research design and analyze their results in the final paper. They will present their project results orally to the class in time made available for this purpose.

This last phase of the course includes five units of activity which are extended over approximately 14 fifty-minute periods.

## III. COMPETENCY OBJECTIVES OF THE INTRODUCTION TO THE SOCIAL SCIENCES COURSE

The competencies are discussed by procedural domain. There are only two major domains--acquisition and production--in the course. Utilization as a set of competencies must await several semesters of research and development of ideas, even in an experientially oriented curriculum. The exception to this postponement of utilization practice is with mature students who could begin to think of implementing findings even after such a course as this one.

We call "generic" competencies those generalized inquiry skills that can be practiced in any field of knowledge, especially in the disciplines that

constitute the social sciences. The specific skill practiced in the class is a manifestation of that generic competency within the actual situation. Thus, a generic competency might read:

> Learning to articulate problem statements which will guide and facilitate a personal search.

and, the specific skill practiced will read:

> Develop a question concerning the "learning situation" which can be researched with several methods of social science inquiry.

Below is a partial list of acquisition and production competencies which are included in this course. Additional competencies occur within a unit; and, it is possible you will discover more as you replicate the course. Skills are as infinite as our ability to recognize a discrete, systematic procedure in the conduct of inquiry. Each specific skill identified in a unit is provided with measurement criteria so that you can assess its development.

A. Acquisition Competencies

Students learn to identify:

1. Generic: The existing perspectives and parameters of a division of knowledge.

   Specific: The fundamental goals of the social sciences, in particular, those of psychology and sociology.

2. Generic: The forms for articulating problems, hypotheses, theories, and laws appropriate in a field of knowledge.

   Specific: The characteristics of a researchable question in the disciplines of psychology and sociology.

3. Generic: The criteria for fact and for evidence in a field of knowledge.

   Specific: Several of the criteria for fact and evidence in psychology and sociology (as well as more generic training in the distinction between opinion and factual statements.)

4. Generic: The methods of data collection, classification, and other organizational modes by which knowledge is developed in the course of inquiry.

   Specific: The basic inquiry methods used to collect data in the social sciences, and several methods to organize data practiced in the social sciences.

5. Generic: The basic vocabulary which directs the discovery and classification of knowledge in a field of knowledge.

   Specific: The basic vocabulary used in behavioral sciences, such as, psychology and sociology in the study of human behavior.

6. Generic: The reporting practices that communicate the results of inquiry in a field of knowledge.

   Specific: Reporting practices common to behavioral sciences, such as psychology and sociology.

7. Generic: The kinds of application, and kinds of technology, that result from the research of a field of knowledge.

   Specific: Kinds of application and new technology that result from research into crowding and into learning situations, conducted by psychologists and sociologists.

B. Production Competencies

Students learn to:

1. Generic: Articulate personal assumptions concerning issues to be researched in a field of knowledge.

   Specific: State personal assumptions about teacher-student situations within settings they have experienced.

2. Generic: Formulate questions and propositions which can guide thorough and efficient research in a field of knowledge.

   Specific: Construct two variable questions about a "learning situation" which are researchable, i.e., suggest areas of inquiry, types of evidence needed for an answer, methods of investigation, and criteria by which the evidence may be evaluated.

3. Generic: Design a logical search strategy, combining several inquiry methods, that can economically generate sufficient data to satisfy the question or proposition.

   Specific: Design a research strategy which combines behavioral observation, survey, cultural analysis, and statistical analysis in answering a question concerning a "learning situation."

4. Generic: Construct research instruments capable of recording data that is necessary and sufficient for answering a question in a field of knowledge.

   Specific: Construct behavioral observation and survey instruments that can create the data needed for beginning to answer your research question on the "learning situation" (a cultural analysis and statistical analysis of the data will aid in determining whether the question can be adequately answered).

These are several of the competencies developed in the course. The lesson plan for each activity will list each competency in the activity which will be measured.

## IV. PEDAGOGICAL METHODS

The course is built on a pedagogical model designed to reinforce conceptual learning with actual practice. Care is taken in the selection of individual and group activities to provide the varied experiences vital to a holistic assimilation of the learning objectives. Learning methods must provide students with an adequate balance of reflection, oral and written expression, group sharing of thought and activity, and problem solving. Why? Experience and research have shown that the more the classroom approaches in its forms of learning the forms of everyday social participation, the more the ideas, values, and procedures that are the learning objectives of the class will be maintained in the practice of the student beyond the classroom.

Moreover, the sequencing of the varied activities lends to student integration of the learning objectives into his everyday life. The acquisition of information must be followed with time for reflection; ideas and values must be bonded through practice and tested through shared activity.

The distinctive methods we have incorporated into the pedagogy of the course are:

a. The Lecture Discussion

The traditional form of lecture will be followed at the very beginning of the course in order to introduce the major concepts and methods of the social sciences. As the course should be limited to 25-30 students, discussion will be possible within the lecture mode.

b. In-Class Writing Intervals

At certain points of a lecture or discussion, we have found it beneficial to give students three to five minutes to write their thoughts on the concept in question. This break in the talk enables the individual to reflect and carefully articulate a response. Then, the discussion continues.

c. The Guided, Inductive Method of Reading

The readings we assign are all accompanied by worksheets which direct questions to particular pages and paragraphs. This guided mode of reading homework has been found effective with freshmen, especially "open admissions" students, as they are made certain of what is important to read and their answers are formed in response to specific questions.

For the case studies in research that are assigned, we actually number the paragraphs. This allows us to refer to particular paragraphs, and through inductive analysis, infer the purposes and methods of the contributing researchers.

d. The Modelling of Research Procedures in Guided Simulation

The simulation of research methods enables the student to validate his understanding of instrument construction and application in common with the other students in the class. A shared question and the same research method is practiced by all, and then discussed as a group.

The modelling of a simulated activity is a necessary stage in learning a procedure well enough to use it independently.

e. The Guided, Independent Research Project

Whereas the modelling simulation helps the student absorb the proper techniques and responses to situations, the independent research project places them in real events and challenges them to formulate a research design capable of gathering evidence and arriving at a responsible conclusion (even if it is that no answer can be made, given the available evidence).

It is a guided inquiry for worksheets that help the student develop the research design. In the social science project, the student develops his own behavioral observation and survey instruments which the teacher approves in order to accurately and responsibly gather evidence.

The student can demonstrate self-directedness, mastery of the previously learned techniques and concepts in this independent project.

f. Small Group Discussion and Sharing of Work

Time is provided in class for small groups to show each other their research designs (both in the simulation and in the independent research project). This form of communication creates an esprit among the students towards the work and allows peer tutoring which makes possible a wider success within the class. As the purpose of the simulation is simply to acquire the concepts and techniques of research, and since the independent research project is always a unique hypothesis pursued by the individual student, the sharing of answers does not obviate the performance tests presented by the project mode.

g. Individual Presentation of Research Results

The class will give each student an opportunity to present the question or proposition, research design, and research results of his independent project.

The outline given the student to help him compile his results also may serve as a guide to presentation.

V. ASSESSING COMPETENCIES

A. Introduction: Goal-Oriented Competencies

The attempts to design an evaluation schema for competency development must consider two major facts concerning the nature of skills:

1. Skills, by definition, are learned and imply development.
2. Skills are used within goal-oriented activity.

Placing skill assessment within the locus of these essential characteristics suggest the direction of an evaluation design:

a - Skills are tracked within the actual projects they seek to accomplish and each skill's development is determined in the light of its adequacy and accuracy in achieving the goal; repeated exercise of a skill in various projects enable estimation of its development.

We will call this criterion PERFORMANCE. A fuller definition of its nature and use in the assessment system appears in B.

b - The rationale of a project helps to shed light on the selection and use of skills. The conscious purpose with which any act is performed has been called by philosophers of action, such as Merleau-Ponty (1961), the distinctive human trait which differentiates us from other forms of life. The higher the consciousness of one's purpose, the more freedom one has to seek skills that will be effective in achieving the purpose.

We will call this criterion PURPOSIVENESS. A fuller definition of its anture and use in the assessment system appears in B.

c - The self-directed choice exhibited in meeting the challenge of goal-oriented activity is crucial in personal skill development. Individuality is furthered by each person's development of an assortment of skills that helps them pursue interests and achieve goals. Originality in one's choices, suitability of choice to goal, and the economy of selection aid effective individuality in skill development. A conscious, sure-willed person is one who has practice in self-directed selection of actions that satisfy goals.

We will call this criterion SELF-DIRECTEDNESS. A fuller definition of its nature and use in the assessment system appears in B.

B. Defining Goal-Oriented Competency Criteria

Two types of definition will be given the goal-oriented competency criteria of PERFORMANCE, PURPOSIVENESS, AND SELF-DIRECTEDNESS in this introduction: a nominal and an operational definition. The nominal definition will allow a general understanding of how these criteria and their sub-indicators, can be applied to any goal-oriented skill, in this course or elsewhere. The operational definitions of the criteria will fit each particular skill application and thus, will be found in the 19 unit activities to allow accurate assessment of the skills necessary for that unit activity.

An operational definition explains the meaning of the term in the context of its usage. A nominal definition is an explanation of a term that is free of any particular context.

A thorough nominal set of definitions appears in this section. A representative set of operational definitions of the goal-oriented competency criteria appears after the nominal, but, the complete span of operational definitions must be found with each particular unit activity. As you will see, not every measurement concept is used for a purposeful activity; an objective test will use only one or two critera, whereas a search in a library for some text necessary for a personal project will use all criteria. The scope of the goal-oriented activity, the room for originality, and the personal responsibility involved for all the parts of the activity, will determine how many of the goal-oriented competencies will be used in assessing skilled behavior.

Nominal Definitions of Goal-Oriented Measurement Principles

1. Purposiveness

1.1 Clarity (in concept, statement, definition)

The clarity of concept, definition, or statement is the quality of word selection and complete though used to state idea.

(For example, in academic research, it includes the formulation of clear questions or propositions to guide research; the formulation of operational definitions, etc..)

1.2 Coherence (in rationale)

The coherence in rationale is the logical appropriateness of the proposition, question, or statement in the context of the problem or issue under consideration.

(For example, in academic research, it includes the designation of behavioral indicators that can guide the collection of evidence; the appositeness of a hypothesis, given the original claim, etc..)

2. Performance

2.1 Adequacy (thoroughness and sufficiency of skill application)

The adequacy of performance is the fulfillment of necessary steps to satisfy the goal with thoroughness in each step of the performance and sufficient activity in the total scope of the project to realize the goal.

(For example, in academic research, an adequate performance would be one that completed the research design with quality results in each phase.)

2.2 Accuracy (correctness and fidelity)

The accuracy of performance is consideration of the errors of judgment and execution in each of the procedures and estimation of judgment and execution of each step in light of the total plan.

(For example, in academic research, an accurate performance would be adherence to the total research design and freedom from procedural errors in the carrying out of each step.)

3. Self-Directedness

3.1 Economy (minimum necessary to fulfill purpose)

The economy in a selection of response, among alternatives, satisfies the purpose in the least complex way.

(For example, in academic research, the choice(s) evidence the minimum possible methods of inquiry to afford necessary and sufficient results.)

3.2 Originality (sign of individuality)

The originality shown in the selection of response, among alternatives, is evidenced by choices not formerly identified as possible ones for this purpose.

(For example, in academic research, methods of inquiry, and research settings are used not previously stressed as alternatives for the particular problem.)

3.3 Suitability (selection of skilled response fits purpose)

The suitability of a response, selected from alternatives, is determined by its logical appropriateness to the terms of the problem.

(For example, in academic research, selection of inquiry methods and settings should offer promise of the kind of evidence needed for proof.)

Operational Definitions of Goal-Oriented Measurement Principles

An operational definition of each measurement principle will be made on a four point continuum that allows a judge of the activity to determine superior, satisfactory, and inadequate performance.

The numbers refer to distinct qualities which an operational definition specify.

The judge will locate characteristics in setting up the schema which are grouped as (4-good), (3-satisfactory), (2-improvement needed), and (1-inadequate given task, tutorial intervention required).

On the following pages, the evaluation criteria will be applied to a worksheet used in Introduction to the Social Sciences to help the student formulate a researchable question or claim.

Notice how the worksheets are designed to enable each part to be evaluated according to one or more of the seven criteria.

Also, note that the two criteria of performance are not used in this worksheet for it does not call upon actual inquiry activities by the student, only on cognitive planning.

Operational definitions for each of the five applicable criteria are given in the range of adequate to inadequate fulfillment. This complete set of definitions is made for each worksheet so that the scorer can assess work exactly, and that other scorers can come to agreement about what is expected and what accord the work has with these expectations.

Reference to operational definitions, rather than the generic, "nominal" definitions of the criteria, allow exactitude that permits a claim of validity across a panel of judges.

The worksheet used to direct skilled activity appears as Exhibit 1, followed by the operationally defined assessment criteria, Exhibit 2.

Exhibit 3 is a scoring sheet which will be used for this and all other unit activities. Exhibit 4 is a completed worksheet by a student, and Exhibit 5 is the score of this worksheet completed by a judge according to the operational definitions.

EXHIBIT 1

UNIT 13 WORKSHEET L2 Formulating a Researchable Question and Defining Concepts

NAME_____

1. Write your question:

_____ _____

_____

_____

2. Give names to the two questions involved in your hypothesis:

Concept 1: _____

Concept 2: _____

3. Write nominal and operational definitions for each concept:

.....

Concept 1:

a - nominal:

b - operational:

.....

Concept 2:

c - nominal:

d - operational:

.....

4. Provide three (3) indicators for each concept:

| | Concept 1 | Concept 2 |
|---|---|---|
| (1) | | (4) |
| (2) | | (5) |
| (3) | | (6) |

5. Number 1-6 on the reverse side. Next to each number write a short explanation of how and why each of your indicators reflects one of your two concepts. Each statement can begin "Indicator #1 can be used to measure Concept #1 because..."

EXAMPLE OF MEASURING GOAL-DIRECTED ACTIVITY IN ACADEMIC RESEARCH WITH THE AFOREMENTIONED MEASUREMENT PRINCIPLES:

A WORKSHEET USED FOR STATING A RESEARCHABLE QUESTION IN INTRODUCTION TO SOCIAL SCIENCES

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Clarity of concept, definition, statement

   (4) - The concept is stated in no more than three words; it suggests behavioral indicators; the nominal and operational definitions are clearly stated and sufficient in explanatory power.

   (3) - Errors in clarity and thoroughness of concept, definition, and statement occur, but the meanings are clear enough to allow correction of basic ideas presented.

   (2) - Some major conceptual or definitional element must be added in order to allow for further work.

   (1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of questions, concepts, etc.).

   b. Coherence in rationale

   (4) - The meaning of the answer is logically related to the purpose of the question.

   (3) - The meaning of the answer is somewhat vague given the purpose of the question.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

a. Economy

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied, and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

c. Suitability (Cont'd.)

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

EXHIBIT 3

| WORK-SHEET QUESTIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| | | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

NAME _____

1. Write your question:

Does overcrowding make a difference in a learning situation?

What kind of difference?

2. Give names to the two questions involved in your hypothesis:

Concept 1: Overcrowding

Concept 2: Learning situation * develop a third concept that describes what kind of difference.

3. Write nominal definitions for each concept:

.....

Concept 1:

a - nominal: Overcrowding - too many persons, places or things.

b - operational: a larger number of people gather together but whose learning suffers because they're uncomfortable.

.....

a - nominal: Sitation - being in a particular spot to obtain additional knowledge.

b - operational: a college classroom where 80 people gather together to seek knowledge.

.....

4. Provide three (3) indicators for each concept:

| Concept 1 Overcrowding | | Concept 2 Learning Situation | |
|---|---|---|---|
| (1) | Too many people standing up when no more seats are left. | (4) | People gathered together in a classroom. |
| (2) | Teacher talking loud just to be heard. | (5) | People asking questions in a classroom. |
| (3) | Instructor writing instructions very large on the blackboard. | (6) | Students taking notes in a classroom. |

5. Number 1-6 on the reverse side. Next to each number write a short explanation of how and why each of your indicators reflects one of your two concepts. Each statement can begin "Indicator #1 can be used to measure Concept #1 because..."

Indicator #1 can be used to measure concept number 1 because when people are left standing, it means that there is no more room left in the classroom; therefore, the class is too overcrowded.

Indicator #2 can be used to measure concept number 1 because when a teacher talks loud it must mean the classroom must be very large and therefore, the instructor must be talking to a very large number of people.

Indicator #3 can be used to measure concept number 3 because when an instructor writes large letters on the board, it means the people in the rear must have to look very far up front to see the board; therefore, there must be many people in the class.

Indicator #4 can be used to measure concept number 4 because when people assemble themselves together in a classroom, the first impression you get is that they are in the classroom to learn.

Indicator #5 can be used to measure concept 5 because people usually ask instructors questions because they don't understand and wish to learn.

Indicator #6 can be used to measure concept number 6 because students taking notes gives you the impression they are taking those notes to study so they can learn the given material.

EXHIBIT 5

| WORK-SHEET QUESTIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| #1 | 3 | 4 | 3 | 4 | 4 | NA | NA | 18 | 20 |
| #2a | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #2b | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #3a | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #3b | 3 | 3 | NA | NA | NA | NA | NA | 6 | 8 |
| #3c | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #3d | 3 | 4 | NA | NA | NA | NA | NA | 7 | 8 |
| #4.1 | 4 | 4 | 4 | NA | 4 | NA | NA | 16 | 16 |
| #4.2 | 4 | 4 | 4 | NA | 4 | NA | NA | 16 | 16 |
| #4.3 | 3 | 3 | 4 | NA | 3 | NA | NA | 13 | 16 |
| #4.4 | 4 | 4 | 3 | NA | 4 | NA | NA | 15 | 16 |
| #4.5 | 4 | 4 | 4 | NA | 4 | NA | NA | 16 | 16 |
| #4.6 | 4 | 4 | 4 | NA | 4 | NA | NA | 16 | 16 |
| #5.1 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #5.2 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #5.3 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #5.4 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #5.5 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |
| #5.6 | 4 | 4 | NA | NA | NA | NA | NA | 8 | 8 |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 1 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: What are the Social Sciences?

Generic skill objectives:

Identifying the basic goals and ways research is organized (disciplines), in a major approach to knowledge.

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Procedural skill objectives:

1. Ability to identify, paraphrase, and recall the purposes of social science.
2. Ability to identify, paraphrase, and recall the basic goals of the disciplines included within the social sciences.

Prerequisite procedural skills:

1. The ability to paraphrase.
2. Dictionary skills.
3. A basic vocabulary concerning human thought, behavior, and emotions.

---

Concepts developed:

1. knowledge/to know
2. social science
3. human behavior
4. discipline
5. civilization

Prerequisite concepts:

---

Readings and/or required supplemental materials:

The Encyclopedia Americana (Social Sciences)

The Encyclopedia Britannica (Social Sciences, History of)

A dictionary that lists social science disciplines.

---

General description of unit activity (i.e., what the student does):

The student prepares for unit #1 activity by completing Worksheet A. He will consult a dictionary and an encyclopedia in his homework. In the class which deals with unit #1 activity, the students use their completed worksheet as a basis for discussion.

Teacher responsibilities and suggestions for instructor:

Worksheet A should be thoroughly surveyed. Do not dwell too long on special issues. The semester long activity will achieve the depth understanding of the study of human behavior which is only introduced in this lesson.

Concentrate on student understanding of the concept definitions (knowledge, social science, human behavior, discipline(s), and civilization). The concepts empirical and evidence will be more fully considered in a later activity.

Don't be afraid of a little didacticism in this first activity. Refer the student to the paragraphs on the worksheet as you cover the work (i.e., inductive reading).

---

Work to be handed in/evaluated:

Worksheet A

The worksheet will be scored only according to the criteria of SELF-DIRECTEDNESS (economy, originality, and suitability). Explain this grading system to the students when you hand back their corrected work. The students will use their worksheet during unit activity #1; collect it at the end of the class.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Explain Worksheet Answers.

TIME FOR STUDENT COMPLETION OF WORK: Homework before class.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Entire class.

---

How does this unit relate to previous and future work:

PREVIOUS: This unit introduces the goals and distinctive characteristics of the social sciences. In your first meeting where the syllabus was explained, and the course goals and projects discussed, you gave your own brief account of the social sciences. This activity establishes the broad parameters of social science, and should help organize the student's existing generalizations concerning the study of human behavior.

FUTURE: At the beginning of the next class, before you review Worksheet B, give the students a pop quiz on the goals of social science and several of the disciplines, especially sociology and psychology. As the course progresses, the distinctive inquiry methods and sources of evidence that make up the social sciences will be derived from the broad goals considered in Unit 1.

UNIT 1 WORKSHEET A WHAT ARE THE SOCIAL SCIENCES?

1. Read this introductory statement that depicts the social sciences, and answer the questions that follow:

Par. 1 "The social sciences, which deal with human behavior in its social and cultural aspects, include the following disciplines: economics, political science, and sociology; social and cultural anthropology, social psychology, and social and economic geography; and those areas of education that deal with the social contexts of learning and the relation of the school to the social order."

(Encyclopedia Britannica)

a. Look up the words human and behavior in a dictionary and write out each definition below:

(1) human

(2) behavior

b. Now, write a definition of human behavior in your own words:

c. What is a discipline? (Use your dictionary)

d. List and define (using a dictionary) the disciplines mentioned above which make up the social sciences:

e. List and define at least 3 disciplines not mentioned in the excerpt above which also are part of the social sciences (use an encyclopedia to find the additional disciplines; look under the social sciences):

2. Read this further explanation of the goals of social science, and answer the questions that follow:

Par. 2

"A primary goal of the social sciences is to help man understand and control his emotions, prejudices, and fears. With greater attention to the social sciences, man may also find the bases of a strengthened value system and the means whereby he can achieve those ends that will provide for the progress of civilization."
(Encyclopedia Britannica)

a. Do you think it is important for one to understand and control emotions, prejudices, and fears? Write several sentences explaining why you think the way you do:

b. Describe one way in which social sciences has helped individuals achieve the above goal:

c. What is a value system? (Use your dictionary for help.)

d. How can the social sciences help humans strengthen their value systems so that progress can be achieved in civilization? (Look up strengthen, progress, and civilization in a dictionary before you answer this question.)

3. Finally, read this explanation of recent developments in the social sciences, and answer the questions that follow:

Par. 3

"Beginning in the 1950's the term behavioral sciences came into widespread use. It was applied to a grouping within the social sciences generally understood to encompass anthropology, sociology, and psychology, except for certain nonbehavioral or nonscientific aspects of these fields. The term also embraces certain behavioral aspects of other social and biological sciences, such as biology, economics, history, geography, law, psychiatry, and political science. Two criteria are used in determining whether a discipline is a behavioral science: Does it deal with human behavior? Does it gather and study its material in a scientific manner? The aim of behavioral science is to establish generalizations about human behavior that can be supported by empirical evidence."

(The Encyclopedia Americana)

a. What are the two criteria used in determining whether a discipline is a behavioral science?

(1)

(2)

b. Using a dictionary, define:

(1) empirical

(2) evidence

(3) generalization

c. Explain why empirical evidence is necessary for generalized knowledge about human behavior:

UNIT 1 WORKSHEET A WHAT ARE THE SOCIAL SCIENCES?

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: economy, originality, suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Economy (1b, 1e; 2a, b, c, d; 3a(1), (2))

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement.

2. Originality (1e; 2a, b, c, d; 3c)

(4) - Originality is shown in the ideas discussed, and in the examples chosen.

(3) - The response reflects answers offered as model in class by teacher, or discussed by other students, but is adequate in light of question being asked.

(2) - The response is stereotypic to a degree that reflects a lack of seriousness in the attempt to answer question in a creative, independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of meaningful responses.

3. Suitability (all answers on worksheet)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to test student's understanding of the unit activity and worksheet.

UNIT 1 WORKSHEET A WHAT ARE THE SOCIAL SCIENCES?

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | AP | PP | % |
| #1a (1) | NA | NA | | | | |
| (2) | NA | NA | | | | |
| b | NA | | | | | |
| c | NA | NA | | | | |
| d | NA | NA | | | | |
| e | | | | | | |
| #2a | | | | | | |
| b | | | | | | |
| c | | | | | | |
| d | | | | | | |
| #3a (1) | NA | | | | | |
| (2) | NA | | | | | |
| b (1) | NA | NA | | | | |
| (2) | NA | NA | | | | |
| (3) | NA | NA | | | | |
| c | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT TITLE: How do social scientists work?

Generic skill objectives:

Identifying the existing perspectives and approaches for developing facts in a field of knowledge

Procedural skill objectives:

1. Ability to state the significance of research in human society, and to cite some of the difficulties that face social science research.
2. Ability to list several tools and techniques used by social scientists in gathering data.

Prerequisite procedural skills:

1. Dictionary skills.
2. Inferring from data.
3. Sorting, classifying skills.

Concepts developed:

1. research
2. law
3. prediction
4. data
5. objectivity

Prerequisite concepts:

1. knowledge; to know
2. civilization

Readings and/or required supplemental materials:

A dictionary

General description of unit activity (i.e., what the student does):

The student prepares for unit #2 activity by completing Worksheet B. He will read the paragraphs on the worksheet closely, and use a dictionary when needed in his homework. The students use their completed worksheets as a basis for unit #2 activity in the classroom.

The student should be able to defend his answers on Worksheet B by referring to specific sentences in the paragraphs which are the bases for the answer. This "inductive reading" activity will be used throughout the semester.

For students who are new, or not prepared, you may want to provide time during the class to allow them to read the paragraphs and complete the answer. During such an "in-class writing interval" you may allow prepared students to discuss their answers with each other.

The class for the unit #2 activity is begun with the pop quiz on the disciplines of social science (see Unit 1 directions for future activity). Then, it will follow the group discussion, in-class writing interval, and small group sharing based on Worksheet B.

Teacher responsibilities and suggestions for instructor:

Worksheet B is the basis of several concepts you will develop over the course of the semester. Foremost among them are: 1) cultural analysis, and 2) objectivity. Cultural analysis is the type of discussion made by C. Wright Mills, i.e., placing the specific phenomenon in its cultural context. When you deal with the teaching-learning project, especially, the ability to make a cultural analysis of what is studied is critical. (Begin to use the term.)

Objectivity is a goal in the learning outcomes of the course. The various social scientific methods that are practiced will bring a respect for objectivity, i.e., a commonly understood world.

---

Work to be handed in/evaluated: Stress group discussion, the airing of viewpoints and wide participation in this unit activity.

Pop Quiz - Grade in terms of SELF-DIRECTEDNESS criterion of <u>suitability</u>.

Worksheet B - Grade in terms of SELF-DIRECTEDNESS criteria only.

The students will use their worksheet during unit #2 activity; collect it at the end of the class.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Discuss worksheet answers.

TIME FOR STUDENT COMPLETION OF WORK: Allow 15 minutes for pop quiz.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Approximately 35 minutes.

---

How does this unit relate to previous and future work:

PREVIOUS: This unit introduces the perspectives and methods of the social scientist, building upon the definitions of its disciplines, and discussion of its broad objectives in unit #1. You needn't dwell too deeply on specific methodologies here; they will be taken up in a later unit. Stress the objectivity of a scientific approach, its difference from common-sense, etc..

FUTURE: The unit will prepare the student for his own tools and techniques. He will see the need of recording data for others, replicating experiments, using a shared language, and being more systematic and rigorous than a simple common-sense judgment. On the other hand, he will be aware that he must broaden his vocabulary and make critical analyses of his own experience in culture.

The unit furthers the concepts of knowing and civilization from unit #1, and its concepts of <u>research</u>, <u>law</u>, <u>prediction</u>, <u>data</u>, and <u>Objectivity</u> will be the bases for future research activity by the student himself.

Hand out the next worksheet (C1 and C2) at the end of class. Briefly go over part A of C1 with the class. Tell them that the next class will be used for helping with this activity, and to do as much as possible at home before the class. These self-instructional worksheets have been tested in individualized labs; they should be self-explanatory. You will be able to help those who do not fathom the assignment in the next class period.

UNIT 2 WORKSHEET B HOW DO SOCIAL SCIENTISTS WORK?

1. Service to society: Read the following paragraphs and answer the questions that refer to them:

Par. 1 "The social sciences are designed to serve men as individuals and social beings. In one sense, achievements in these fields may never equal those in natural sciences, where workers depend on predictable outcomes. However, even physical scientists cannot be sure of their universe and its laws. Meanwhile, in the study of human relationships, more precise instruments of research are bringing social scientists closer to plotting accurate trends and making correct predictions about human behavior in the mass.

Par. 2 It has been stated many times that man as a developer of power and technology stands close to God, but as a social animal he ranks much further down the scale. Even lower animals do not kill for the sheer purpose of killing. The gap threatens to grow wider between man's scientific progress and his arrangements to regulate his changing social climate and interrelationships. As modern man surveys the innumerable problems with which he is faced, he is struck by the fact that the bulk of them are in the social realm."

(Encyclopedia Americana)

a. Define research, prediction, and law (Par. 1)

b. Why is it hard for social scientists to predict outcomes of human relationships? (Par. 1 and 2)

2. The tools and techniques of behavioral scientists: Read the following paragraphs and answer the questions that refer to them:

Par. 3 "Behavioral scientists seek to research and collect data in an objective, scientific way, rather than to rely on the documentary practices generally employed by economists and historians. The behavioral disciplines have acquired a wide array of tools and techniques, ranging from electrical devices to measure and record brain activity, to psychological tests of attitudes and personality, tests of learning and social interaction, interview surveys and polls, statistical procedures, and the application of instruments such as recording devices and computers."

(The Encyclopedia Americana)

"Some aspects of society are well known to most people, and almost everyone has some specialized knowledge of a social situation: a family, a work setting, or a life-
Par. 4 style. The sociologist is respectful of this common-sense knowledge, and he often depends upon it--for instance, by interviewing people to learn about their experiences and interpretations. However, common-sense understandings are often fragmentary and uncritical.... Sociological research tries to be more critical and more systematic than common-sense."
(Broom and Selznick, Sociology)

a. Define data, objective, and common-sense (with help of a dictionary)

b. List the tools and techniques mentioned in Par. 3 used to research and collect data in an objective, scientific way:

(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)

c. How does knowledge based on common-sense differ from the knowledge gained through social scientific methods? (Par. 4)

3. The imagination of the social scientist: Read the following paragraphs and answer the questions that refer to them:

"Nowadays men often feel that their private lives are a series of traps. They sense that within their everyday worlds, they cannot overcome their troubles, and in this feeling, they are often quite correct: What ordinary men are directly aware of and what they try to
Par. 5 do are bounded by the private orbits in which they live; their visions and their powers are limited to the close-up scenes of job, family, neighborhood; in other milieux, they move vicariously and remain spectators. And the more aware they become, however vaguely, of ambitions and of threats which transcend their immediate locales, the more trapped they seem to feel.

...The sociological imagination enables its possessor to understand the larger historical scene in terms of its meaning for the inner life and the external career of a variety of individuals. It enables him to take into account how individuals, in the
Par. 6 welter of their daily experience, often become falsely conscious of their social positions. Within

that welter, the framework of modern society is sought, and within that framework the psychologies of a variety of men and women are formulated....

Par. 7 The first fruit of this imagination--and the first lesson of the social science that embodies it--is the idea that the individual can understand his own experience and gauge his own fate only by locating himself within his period, that he can know his own chances in life only by becoming aware of those of all individuals in his circumstances. In many ways it is a terrible lesson; in many ways a magnificent one. We do not know the limits of man's capacity for supreme effort or willing degradation, for agony or glee, for pleasurable brutality or the sweetness of reason. But in our time we have come to know that the limits of 'human nature' are frighteningly broad. We have come to know that every individual lives, from one generation to the next, in some society; that he lives out a biography, and that he lives it out within some historical sequence. By the fact of his living he contributes, however minutely, to the shaping of this society and to the course of its history, even as he is made by society and by its historical push and shove."

(C. Wright Mills, The Sociological Imagination)

a. In your own words, explain what the sociological imagination allows its possessor to understand:

b. How can knowledge gained from social science help you live more effectively in history? (Look up effective in dictionary.)

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: economy, originality, suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Economy (1a, b; 2a(1), (2), (3); 2c; 3a,b)

(4) The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) The response must be limited both in length and kind in order to make further work possible.

(1) The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement.

2. Originality (3b)

(4) The selection of response shows originality in the statement of ideas and examples given.

(3) The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) The response is inadequate to a degree which calls for tutorial intervention to help individual think of meaningful responses.

3. Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of the unit activity and worksheets.

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | AP | PP | % |
| 1 a | NA | | | | | |
| b | NA | | | | | |
| 2 a(1) | NA | | | | | |
| a(2) | NA | | | | | |
| a(3) | NA | | | | | |
| b(1) | NA | NA | | | | |
| b(2) | NA | NA | | | | |
| b(3) | NA | NA | | | | |
| b(4) | NA | NA | | | | |
| b(5) | NA | NA | | | | |
| b(6) | NA | NA | | | | |
| b(7) | NA | NA | | | | |
| b(8) | NA | NA | | | | |
| b(9) | NA | NA | | | | |
| b(10) | NA | NA | | | | |
| b(11) | NA | NA | | | | |
| c | NA | | | | | |
| 3 a | NA | | | | | |
| b | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT TITLE: Determining Fact and Establishing Evidence

Generic skill objectives:

1. Learning to distinguish between fact and opinion.
2. Learning to determine facts that will serve as evidence to validate a claim.

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Procedural skill objectives:

Above

Prerequisite procedural skills:

1. Inferring from data.
2. Ability to relate personal life experience in written form.

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Concepts developed:

1. fact
2. evidence
3. opinion

Prerequisite concepts:

1. data
2. objective

---

Readings and/or required supplemental materials:

Only Worksheets C1 and C2

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General description of unit activity (i.e., what the student does):

The purpose of unit #3 activity is to focus the student on the nature of fact, and what establishing evidence means. The best approach we have found is this preliminary drill activity. Review the Worksheets C1 and C2 in class; allow students who haven't finished to complete their worksheets while you go over individual questions from C1 and C2 with the class as a group.

Ask individual students to share their answers and their reasoning which led to the answer.

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Teacher responsibilities and suggestions for instructor:

Stress the role of factual statements and evidence in developing an objectivity that can be shared in common. Yet, remind the students that cultural analysis has room for opinion statements, if these opinions grow from careful inferences derived from facts that could be found by another person.

This activity is the foundation for the articulation of reasoned judgments that will be made by students as they develop their own research project and defend the results they feel they have achieved. The more you can bring the reasoning of each student to an in-class articulation, the better results you will see from them later.

Work to be handed in/evaluated:

Worksheets C1 and C2. These worksheets have objective answers in some cases (i.e., is the statement factual or opinion?), but Part C of C1, and the whole of C2 will be graded according to one of the criteria of Self-Directedness, that of <u>suitability</u>.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Introduction to next assignment at end of class.

TIME FOR STUDENT COMPLETION OF WORK: Allow most of period for students to complete worksheets in class, or correct them.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Direct attention of all students, even those not finished, to sample reviews. Use entire class for review, except for introduction.

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How does this unit relate to previous and future work; to next assignment.

PREVIOUS: This unit involves the student in the thinking processes of social scientists as they observe phenomena and make descriptive statements and judgments. It builds on the previous units in its continuation, in a more active manner, of the discussion of objectivity and data gathering.

FUTURE: The process of making informed, objective judgments is begun here as a formal class activity, for which the student is accountable. this will help him perform these operations more responsibly when he is doing his independent project.

UNIT 3 WORKSHEET C1 WHAT IS A FACT?

A. When we think critically about the world and our experience, we base our thinking on knowledge. Knowledge is based on fact.

Question 1: What is a fact? (Write your understanding in the space below.)

_____

_____

Answer 1:

A fact has these characteristics:

a. A fact is something (person, place, thing, situation) known with the certainty of your senses (sight, hearing, taste, feeling, etc.)

b. A fact is something that can be objectively verified, which means that another person can know what you call a fact with the certainty of his senses.

c. We accept as fact something that has happened which we cannot experience sensually if we believe we can find evidence for the fact if we looked for it.

Question 2: Which of these statements could be called a statement of fact?

1. The flower is pretty.
2. The flower has yellow petals and has a three inch stem.
3. The flower can cause hay-fever in some people.
4. The flower is a gentle creature.

Answer 2:

Statements 2 and 3 are factual. 2 can be verified objectively by anyone. 3 can be verified or disproven with the proper experiments.

Statements 1 and 4 are statements of opinion. Opinion is how we feel about something. People can agree or disagree with feeling statements, but they cannot verify feeling statements objectively.

B. In the list which follows, some of the sentences are statements of fact, and others are statements of opinion. Indicate to which class you think each statement belongs by placing F for fact or an O for opinion in the space provided.

O or F

_____ 1. The moon has a surface of brittle rock.

_____ 2. The space-race between the U.S. and Russia will cause World War III.

_____ 3. The winner of the Miss U.S.A. contest was beautiful.

_____ 4. The Indians are better off today than they were before the white men came to America.

_____ 5. The average height of persons in China has increased several inches since 1800.

_____ 6. Bread tastes better in 1978 than it did in 1970.

_____ 7. Jimmy Carter has been a good president.

_____ 8. Julius Caesar wrote a book about his wars in Gaul.

_____ 9. She has more endurance in cross-country running than he does.

_____ 10. Crises often bring out the quality of caring for others in people.

_____ 11. All communists in the United States are traitors to this country.

_____ 12. Joe Morgan of the Cincinnati Reds is a better fielder at second base than David Cash of the Montreal Expos.

_____ 13. No one has ever played tennis as well as Jimmy Connors.

_____ 14. Movies are better than ever.

_____ 15. Some voters would like to see the terms in office of congressmen lengthened.

C. Making descriptive factual statements.

A fact is something that can be objectively verified by anyone through their senses.

If we want someone to accept a statement we make as a factual statement, we must be descriptive so that he can experience it as a fact.

Question 1: What is a better factual statement?

a. He was fair to all his students? or

b. He gave each student the opportunity to write what each knew about the subject?

Answer: b is the answer because it describes a situation that can be objectively verified (whether an opportunity was or was not provided each student to write what he knew about the subject.)

Question 2: What is a better factual statement?

a. He was well-dressed? or

b. He wore a plain blue shirt and blue-and-white striped pants?

Answer: b is the answer because it describes what he wore. This can be objectively verified, and then a judgment of taste can be made by another person.

a does not allow the other person to see the facts, thus make his own judgment of taste.

D. Indicate below which of the two statements of a situation provide the best description to allow another person to judge whether the statement is factual. Place the letter x next to the sentence with the best description.

____1a. The students seemed relaxed as they studied outside under trees on the large lawn.

____1b. The students all sat on the lawn, under trees, with books in front of them.

____2a. The art complex is made of reinforced concrete, with skylights of unbreakable glass.

____2b. The art complex appears to be a permanent structure.

____3a. The library casts a knowledgeable shadow.

____3b. When I pass the library it makes me think of knowledge.

____4a. The campus is planned so that the trees, shrubs, and open grassy spaces provide students with a view of nature and places to rest.

____4b. The campus is a lesson in harmony between man and his natural surroundings.

____5a. His voice resonanted with maturity and sophistication rarely found in students.

____5b. His voice drew the attention of many students and what he said many agreed with.

____6a. He admitted that he only was in his office as an advisor four hours a week.

____6b. He was frank about his duties.

____7a. She gazed out the window at her dead garden.

____7b. She seemed depressed and distracted at the inevitability of death in nature.

____8a. He is a large man.

____8b. He is 6 feet tall and weighs 210 pounds.

____9a. He appeared unprepared for the occasion.

____9b. He came to fix the leaky sink without any tools.

____10a. He interrupted the speech by stating the speaker had exceeded his five minute limit.

____10b. He immediately took control of the situation.

E. Describing facts in a personal experience.

When you relate a factual experience from your own life to someone, he will see your experience as <u>factual</u> if you can be adequately <u>descriptive</u> in your report.

1. Think of a <u>personal</u> <u>achievement</u> from your past and give a report of it to someone. (The achievement can be in sports, school, work, art, helping at home, facing situations with courage, anything you feel proud of having done.)

| For example: I am proud of having finished a long distance race. |
|---|

What was your personal achievement (answer below):

| <u>Personal</u> <u>achievement</u>: |
|---|
| _____ |

Now, reflect on your past personal achivement. Visualize yourself doing it.

2. Write five descriptive factual statements about your personal achivement (below):

(a)

(b)

(c)

(d)

(e)

UNIT 3 WORKSHEET C 1 ANSWERS

In the list which follows, some of the sentences are statements of fact, and others are statements of opinion. Indicate to which class you think each statement belongs by placing an F for fact or an O for opinion in the space provided.

| O or F | | |
|---|---|---|
| f | 1. | The moon has a surface of brittle rock. |
| o | 2. | The space-race between the U.S. and Russia will cause World War III. |
| o | 3. | The winner of the Miss U.S.A. contest was beautiful. |
| o | 4. | The Indians are better off today than they were before the white men came to America. |
| f | 5. | The average height of persons in China has increased several inches since 1800. |
| o | 6. | Bread tastes better in 1978 than it did in 1970. |
| o | 7. | Jimmy Carter has been a good president. |
| f | 8. | Julius Caesar wrote a book about his wars in Gaul. |
| f | 9. | She has more endurance in cross-country running than he does. |
| f | 10. | Crises often bring out the quality of caring for others in people. |
| o | 11. | All communists in the United States are traitors to this country. |
| f | 12. | Joe Morgan of the Cincinnati Reds is a better fielder at second base than David Cash of the Montreal Expos. |
| o | 13. | No one has ever played tennis as well as Jimmy Connors. |
| o | 14. | Movies are better than ever. |
| f | 15. | Some voters would like to see the terms in office of Congressmen lengthened. |

Making descriptive factual statements.

A fact is something that can be objectively verified by anyone through their senses.

If we want someone to accept a statement we make as a factual statement we must be descriptive so that he can experience it as a fact.

Question 3: What is a better factual statement?

a. He was fair to all his students? or

b. He gave each student the opportunity to write what each knew about the subject?

Answer: b is the answer because it describes a situation that can be objectively verified (whether an opportunity was or was not provided each student to write what he knew about the subject.)

Question 2: What is a better factual statement?

a. He was well-dressed? or

b. He wore a plain blue shirt and blue-and-white striped pants?

Answer: b is the answer because it describes what he wore. This can be objectively verified, and then a judgment of taste can be made by another person.

a does not allow the other person to see the facts, thus make his own judgment of taste.

D. Indicate below which of the two statements of a situation provide the best description to allow another person to judge whether the statement is factual. Place the letter x next to the sentence with the best description.

_____1a. The students seemed relaxed as they studied outside under trees on the large lawn.

x
_____1b. The students all sat on the lawn, under trees, with books in front of them.

x
_____2a. The art complex is made of reinforced concrete, with skylights of unbreakable glass.

_____2b. The art complex appears to be a permanent structure.

_____3a. The library casts a knowledgeable shadow.

x
_____3b. When I pass the library it makes me think of knowledge.

x
_____4a. The campus is planned so that the trees, shrubs, and open grassy spaces provide students with a view of nature, and places to rest.

_____4b. The campus is a lesson in harmony between man and his natural surroundings.

_____5a. His voice resonanted with maturity and sophistication rarely found in students.

x
_____5b. His voice drew the attention of many students, and what he said many agreed with.

x
_____6a. He admitted that he only was in his office as an advisor four hours a week.

_____6b. He was frank about his duties.

x 7a. She gazed out the window at her dead garden.

____ 7b. She seemed depressed and distracted at the inevitability of death in nature.

____ 8a. He is a large man.

x 8b. He is 6 feet tall and weighs 210 pounds.

____ 9a. He appeared unprepared for the occasion.

x 9b. He came to fix the leaky sink without any tools.

x 10a. He interrupted the speech by stating the speaker had exceeded his five minute limit.

____ 10b. He immediately took control of the situation.

E. Describing facts in a personal experience.

When you relate a factual experience from your own life to someone, he will see your experience as factual if you can be adequately descriptive in your report.

Question 5: Think of a personal achievement from your past, and give a report of it to someone. (The achievement can be in sports, school work, art, helping at home, facing situations with courage, anything you feel proud of having done.)

| For example: I am proud of having finished a long distance race. |
|---|

What was your personal achievement (answer below):

| My personal achievement: |
|---|
| _____ |

Now, reflect on your past personal achievement. Remember yourself doing it. Try to picture yourself doing it.

2. Write five descriptive factual statements about your personal achievement (below):

a.

b.

c.

d.

e.

UNIT 3 WORKSHEET C2 ESTABLISHING EVIDENCE

Evidence is defined as the facts by which proof or probability may be established.

(The American Heritage Dictionary)

People search for evidence to prove notions they have about things.

1. A lawyer seeks evidence to prove his client innocent of tax evasion.
2. A biologist seeks evidence to prove cancer is caused by a virus.
3. A historian seeks evidence to prove that Germany started World War I.
4. An archaeologist seeks evidence to prove that the pot he found belongs to the Greek culture.
5. An anthropologist seeks evidence to prove that the skeleton he found comes from the Paleozoic Age.

Evidence is a fact that proves or makes probable the idea you seek to establish. Thus, evidence means that: 1) you must have an idea that you wish to demonstrate to yourself and/or other people; and 2) you have to find facts that help you prove the idea.

Facts are just facts; evidence is a fact used to support an idea.

A. Below are ideas that a person wishes to prove. Four facts are listed under each idea. Select the fact or facts which can serve as evidence of the idea. Then explain why they can serve as evidence to prove the idea.

Example

Idea #1: The eggs in the refrigerator are rotten.

Fact 1: I became ill after eating one.
Fact 2: When broken open, a sulfur smell comes out.
Fact 3: The refrigerator was not working for two days while the eggs were inside.
Fact 4: The eggs when scrambled and cooked, do not have the consistency they usually have.

Answer: Facts 2 and 4 are the facts that make the idea the eggs are rotten probable.

Reason: Past experience by many people shows that a sulfur smell comes out of rotten eggs. Bad eggs do not cook with the same consistency as a good egg, experience shows.

Something else may have caused your sickness. You cannot be sure the eggs are bad just because the refrigerator did not work. You must test the eggs themselves.

Idea #2 The electric light bulb in the hallway is burnt out.

Fact 1: When I throw the switch on it does not light.
Fact 2: There is a wire coming out of the wall near the switch.
Fact 3: When I try the bulb in another socket it does not work.
Fact 4: The bulb's glass is discolored and its filament is melted.

Answer:

Reason(for #2):

Idea #3 The stone axe I found in the mud along the lakeside was made by Indians.

Fact 1: Writing on the handle is in a language used by Indians.
Fact 2: Indians lived on this land in the past.
Fact 3: The axe was found by a skeleton.
Fact 4: The axe is large and heavy enough to be used for a weapon.

Answer:

Reason:

Idea #4 The dance Mary did at her Uncle's wedding was an ancient dance from Poland.

Fact 1: Mary and her uncle are Polish.
Fact 2: I asked the woman sitting next to me who said it was an ancient Polish dance.
Fact 3: At Polish weddings the ancient dances of Poland are often performed.
Fact 4: I had never seen such a dance before.

Answer:

Reason:

Idea #5 The physics book I just bought has the most authoritative information in nuclear physics.

Fact 1: There are chapters on Einstein, Neils Bohr, and other modern physicists.
Fact 2: The book was published by Harvard University last year.
Fact 3: The leading magazine on science wrote a review of it which said it contains the most recent knowledge about nuclear physics.
Fact 4: The chapters on nuclear physics are by the foremost scientists in the field.

Answer:

Reason:

Idea #6 The girl who failed the driving test did not know how to drive.

Fact 1: She was driven to and from the test by her father.
Fact 2: She ran into a stop sign while taking the test.
Fact 3: She had only driven a car by herself once before taking the test.
Fact 4: She failed every part of the test except starting the engine.

Answer:

Reason:

Idea #7 Marilyn Monroe was married to Arthur Miller, the playwright.

Fact 1: The marriage was described in a Movie Fan Magazine.
Fact 2: Joe DiMaggio spoke of the marriage during a television talk show.
Fact 3: A copy of the marriage certificate is on file in the archives.
Fact 4: Arthur Miller wrote of the marriage in his autobiography.

Answer:

Reason:

Idea #8 The football game was played more roughly, and with more unsportsmanlike conduct, than any game this year.

Fact 1: The coach said this was the case.
Fact 2: More personal fouls (unsportsmanlike conduct) were called than any game this year.
Fact 3: Movies of the game showed numerous fights after each play.
Fact 4: I had my arm broken in it.

Answer:

Reason:

Idea #9 The parade had fifteen floats with clowns on each.

Fact 1: The morning paper described the parade.
Fact 2: The Association of Clowns held a dinner last night where this was mentioned.
Fact 3: I witnessed this at the parade.
Fact 4: The plans for the parade listed the personnel on each float.
Answer:

Reason:

UNIT 3 WORKSHEET C2 ESTABLISHING EVIDENCE

Evidence is defined as the facts by which proof or probability may be established.

(The American Heritage Dictionary)

People search for evidence to prove notions they have about things.

1. A lawyer seeks evidence to prove his client innocent of tax evasion.
2. A biologist seeks evidence to prove cancer is caused by a virus.
3. A historian seeks evidence to prove that Germany started World War I.
4. An archaeologist seeks evidence to prove that the pot he found belongs to the Greek culture.
5. An anthropologist seeks evidence to prove that the skeleton he found comes from the Paleozoic Age.

Evidence is a fact that proves or makes probable the idea you seek to establish. Thus, evidence means that: 1) you must have an idea that you wish to demonstrate to yourself and/or other people; and 2) you have to find facts that help you prove the idea.

Facts are just facts; evidence is a fact used to support an idea.

A. Below are ideas that a person wishes to prove. Four facts are listed under each idea. Select the fact or facts which can serve as evidence of the idea. Then explain why they can serve as evidence to prove the idea.

Example

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Fact 3: The refrigerator was not working for two days while the eggs were inside.
Fact 4: The eggs when scrambled and cooked, do not have the consistency they usually have.

Answer: Facts 2 and 4 are the facts that make the idea the eggs are rotten probable.

Reason: Past experience by many people shows that a sulfur smell comes out of rotten eggs. Bad eggs do not cook with the same consistency as a good egg, experience shows.

Something else may have caused your sickness. You cannot be sure the eggs are bad just because the refrigerator did not work. You must test the eggs themselves.

Idea #2 The electric light bulb in the hallway is burnt out.

Fact 1: When I throw the switch on it does not light.
Fact 2: There is a wire coming out of the wall near the switch.
Fact 3: When I try the bulb in another socket it does not work.
Fact 4: The bulb's glass is discolored and its filament is melted.

Answer: Fact 4

Reason(for #2): Of the several facts, 4 is the most scientific in that the bulb itself is studied. None of the other facts refer to the condition of the bulb.

Idea #3 The stone axe I found in the mud along the lakeside was made by Indians.

Fact 1: Writing on the handle is in a language used by Indians.
Fact 2: Indians lived on this land in the past.
Fact 3: The axe was found by a skeleton.
Fact 4: The axe is large and heavy enough to be used for a weapon.

Answer: Facts 1 and 2.

Reason: Fact 1 is linguistic evidence that points to an Indian tribe; thus, a sign that the axe may have been made by Indians. Fact 2 makes it possible that Indians made the axe in that environment.

Idea #4 The dance Mary did at her Uncle's wedding was an ancient dance from Poland.

Fact 1: Mary and her uncle are Polish.
Fact 2: I asked the woman sitting next to me who said it was an ancient Polish dance.
Fact 3: At Polish weddings the ancient dances of Poland are often performed.
Fact 4: I had never seen such a dance before.

Answer: Facts 2 and 1 in that order.

Reason: There is a likelihood that the dance is Polish and ancient because of Fact 2. Fact 1 makes it even more likely that Mary danced such a dance.

Idea #5 The physics book I just bought has the most authoritative information in nuclear physics.

Fact 1: There are chapters on Einstein, Neils Bohr, and other modern physicists.
Fact 2: The book was published by Harvard University last year.
Fact 3: The leading magazine on science wrote a review of it which said it contains the most recent knowledge about nuclear physics.
Fact 4: The chapters on nuclear physics are by the foremost scientists in the field.

Answer: Facts 4 and 3 in that order.

Reason: Knowledge in fact 4 that the foremost nuclear physicists wrote chapters in the book is the best evidence; fact 3 can be trusted, too, as it is the leading scientific magazine.

Idea #6 The girl who failed the driving test did not know how to drive.

Fact 1: She was driven to and from the test by her father.
Fact 2: She ran into a stop sign while taking the test.
Fact 3: She had only driven a car by herself once before taking the test.
Fact 4: She failed every part of the test except starting the engine.

Answer: Fact 4

Reason: The results of the objective examination in all its parts is the best evidence. In each of the other facts, she may still have been able to drive.

Idea #7 Marilyn Monroe was married to Arthur Miller, the playwright.

Fact 1: The marriage was described in a Movie Fan Magazine.
Fact 2: Joe DiMaggio spoke of the marriage during a television talk show.
Fact 3: A copy of the marriage certificate is on file in the archives.
Fact 4: Arthur Miller wrote of the marriage in his autobiography.

Answer: Facts 3 and 4 in that order.

Reason: Fact 3 is hard, legal evidence. Fact 4 can be believed because Arthur Miller is a public figure of sound reputation, and his word can be accepted as probably true in fact 2, Joe Dimaggio, is not a direct party to the marriage.

Idea #8 The football game was played more roughly, and with more unsportsmanlike conduct, than any game this year.

Fact 1: The coach said this was the case.
Fact 2: More personal fouls (unsportsmanlike conduct) were called than any game this year.
Fact 3: Movies of the game showed numerous fights after each play.
Fact 4: I had my arm broken in it.

Answer: Fact 2

Reason: Fact 2 is based on the actual count and comparison of fouls in all games this year. Fact 1 is opinion, as is fact 4, even though it is my arm. Fact 3 does not compare all games.

Idea #9 The parade had fifteen floats with clowns on each.

Fact 1: The morning paper described the parade.
Fact 2: The Association of Clowns held a dinner last night where this was mentioned.
Fact 3: I witnessed this at the parade.
Fact 4: The plans for the parade listed the personnel on each float.
Answer: Facts 3 and 4 equally.



Reason: Fact 3 is personal testimony which one can trust (though it is good to check it with other eyewitnesses). Fact 4 is the formal plans of the parade: how it should be, which supports my eyewitness experience.

UNIT 3 WORKSHEET C1 WHAT IS A FACT?

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of the unit activity and worksheet.

UNIT 3 WORKSHEET C1 WHAT IS A FACT?

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS Suitability | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|
| A 1 | | | | | | |
| 2 | | | | | | |
| B 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| C 1 | | | | | | |
| 2 | | | | | | |
| D 1a | | | | | | |
| 1b | | | | | | |
| 2a | | | | | | |
| 2b | | | | | | |
| 3a | | | | | | |
| 3b | | | | | | |

KEY

4 - Good
3 - Satisfactory
2 - Improvement Needed
1 - Inadequate
NA - Not Applicable Here

---

AP - Actual Points
PP - Possible Points

C1

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS Suitability | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|
| D 4a | | | | | | |
| 4b | | | | | | |
| 5a | | | | | | |
| 5b | | | | | | |
| 6a | | | | | | |
| 6b | | | | | | |
| 7a | | | | | | |
| 7b | | | | | | |
| 8a | | | | | | |
| 8b | | | | | | |
| 9a | | | | | | |
| 9b | | | | | | |
| 10a | | | | | | |
| 10b | | | | | | |
| E 1 | | | | | | |
| 2(a) | | | | | | |
| 2(b) | | | | | | |
| 2(c) | | | | | | |
| 2(d) | | | | | | |
| 2(e) | | | | | | |

KEY

4 - Good
3 - Satisfactory
2 - Improvement Needed
1 - Inadequate
NA - Not Applicable Here

---

AP - Actual Points
PP - Possible Points

UNIT 3 WORKSHEET C2 ESTABLISHING EVIDENCE

## APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

**Self-directedness: suitability**

## OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of the unit activity and worksheet.

UNIT 3 WORKSHEET C2 ESTABLISHING EVIDENCE

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS Suitability | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|
| A 2 An | | | | | | |
| Re | | | | | | |
| 3 An | | | | | | |
| Re | | | | | | |
| 4 An | | | | | | |
| Re | | | | | | |
| 5 An | | | | | | |
| Re | | | | | | |
| 6 An | | | | | | |
| Re | | | | | | |
| 7 An | | | | | | |
| Re | | | | | | |
| 8 An | | | | | | |
| Re | | | | | | |
| 9 An | | | | | | |
| Re | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 4, Part 1 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Certain Kinds of Questions Lead to Certain Kinds of Facts.

Generic skill objectives:

To learn the types of facts developed by different kinds of questions.

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Procedural skill objectives:

1. To learn the basic question types, who, what, where, when, how, and why, and the kinds of fact developed through these questions.
2. To learn when a certain kind of question should be asked in a logical development of facts.

Prerequisite procedural skills:

1. Inferring from data.
2. Ability to relate personal life experience in written form.

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Concepts developed:

1. questionning

Prerequisite concepts:

1. fact
2. evidence

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Readings and/or required supplemental materials:

Worksheet D 1

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General description of unit activity (i.e., what the student does):

The student completes the worksheet at home for Unit 4, Part 1, and reviews his answers in a general class discussion. The object of the unit activity is to ground the student in the use of certain questions for the development of certain facts. Thus, in Section B and C of Worksheet D1, the reasoning of each student should be brought out.

This activity should take only 30 minutes. If the students are slow in grasping the ideas, use the whole period for Worksheet D1. As the story writing activity of Section C is a mastery test of the concepts taught, you may have the class create a group story on the blackboard; stress the kind and order of questions asked in order to make a thorough and logical story.

---

Teacher responsibilities and suggestions for instructor:

Link the exercise in Worksheet D1 to the long range goals of the class in your conversation, i.e., the need to ask specific types of questions in the student's independent research project in order to gather the types of information that will make a solid study.

Concentrate on demonstrating how some questions should precede others in order to logically develop evidence, i.e., 'why' questions come after the 'what,' 'how,' and 'when' questions have been explored.

Try to complete D1 in 30 minutes, so that you can go over D2 in the same period.

---

Work to be handed in/evaluated:

Worksheet D1 at the completion of period. The worksheet will be graded according to the criterion of <u>suitability</u> under SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Intersperse explanations with discussion.

TIME FOR STUDENT COMPLETION OF WORK: Do not permit students to work while review is taking place. Everyone should attend together.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 30 minutes; the full hours if necessary.

---

How does this unit relate to previous and future work:

PREVIOUS: This unit begins to show the researcher in action. How questions are asked and the order in which they are asked leads to the establishment of evidence that will satisfy the goals of the research project.

These question-asking exercises are skill development in the basic element of research: a well-formulated question.

FUTURE: In future units, the student will formulate his own broad research question and the smaller questions which will enable him to gather data and complete his project.

UNIT 4 WORKSHEET D1 CERTAIN KINDS OF QUESTIONS LEAD TO CERTAIN KINDS OF FACTS

A. Events happen quickly in the world. In order to identify the facts in an experience, we can ask certain questions about the experience:

| Kind of Question | Kind of Fact |
|---|---|
| Who did it? | person |
| What is it? What was done? | event |
| When did it occur? | time |
| Where did it occur? | place |
| How did it occur? | process or manner |
| Why did it occur? | reason |

Each of these questions can bring out details of an experience so that the experience becomes a set of facts.

For example: If I won a race in a school track meet, when I ask the above questions about the race, here are the facts I get:

Who did it? I did.
What is it? A one mile race. What was done? I won.
When did it occur? On June 15, 1977, at 4:30 p.m..
Where did it occur? At Manual High School athletic field in Louisville, Kentucky.
How did it occur? I came from behind in the last quarter mile and passed the runners from Male and Doss High Schools.
Why did it occur? I was in better physical condition than they were.

Each of these statements are factual statements which can be objectively verified. Another person can check out these facts. (Even the why statement, that I was in better physical condition can be verified if there were endurance test records made before the race. Why statements are always close to opinion, not fact, however.)

Question 1: Think of the past achievement you wrote about in Worksheet C1. Was it learning something difficult? Was it doing well in an athletic contest? Was it facing a situation with courage? What was the achievement?

Write the personal achievement below:

---

Now, ask the who, what, where, when, how, and why questions about the personal achievement in order to bring out more facts about it.

On the reverse side of this page put your factual answers opposite the questions.

B. Practice in identifying <u>who</u>, <u>what</u>, <u>where</u>, <u>when</u>, <u>how</u>, and <u>why</u>.

Below are sentences which are factual. Identify if they are a who, what, where, when, how, or why statement. A sentence may have more than one identifier in it.

Example: <u>who, what, where</u> He mowed the front lawn.
<u>who, what, where</u> She went shopping yesterday at Krogers.
<u>who, what, where, when</u> Tom had an accident on the Watterson Expressway Friday afternoon around 1 p.m..

1. _____ Two police officers were patrolling Main Street last night.

2. _____ They saw a fire at Frishe's Bowling Alley, 4113 Main St., at 3:32 a.m. today.

3. _____ Firemen said the fire was confined to an office.

4. _____ The fire failed to spread beyond the office because its walls were fireproof.

5. _____ Evidence of arson was found.

6. _____ Police said the thieves probably set the fire to hide the robbery.

7. _____ The fire was started with oil soaked rags stuffed into a desk drawer.

8. _____ Police discovered the evidence by sifting carefully through the debris of the office.

9. _____ The owner of the building was contacted by the police to identify suspects.

10. _____ Mr. Samuel Butler, owner of the bowling alley, identified two men who had been seen loitering near the office the day before the fire.

C. Write a ten-sentence story about an experience you had in the summer of 19 using the who, what, where, when, how, and why identifiers to guide your description. You may use more than one identifier in constructing each sentence (as in the sentences in Part B).

| Name Identifiers (who, what, where, when, how, why) | | Kind of Facts Included in Sentence (person, event, time, place, process or manner, reason) |
|---|---|---|
| _____ | 1. _____ | _____ |
| | _____ | _____ |
| _____ | 2. _____ | _____ |
| | _____ | _____ |
| _____ | 3. _____ | _____ |
| | _____ | _____ |
| _____ | 4. _____ | _____ |
| | _____ | _____ |
| _____ | 5. _____ | _____ |
| | _____ | _____ |
| _____ | 6. _____ | _____ |
| | _____ | _____ |
| _____ | 7. _____ | _____ |
| | _____ | _____ |
| _____ | 8. _____ | _____ |
| | _____ | _____ |
| _____ | 9. _____ | _____ |
| | _____ | _____ |
| _____ | 10. _____ | _____ |
| | _____ | _____ |

B. Practice in identifying who, what, where, when, how, and why.

Below are sentences which are factual. Identify if they are a who, what, where, when, how, or why statement. A sentence may have more than one identifier in it.

| | | |
|---|---|---|
| Example: | who, what, where | He mowed the front lawn. |
| | who, what, where | She went shopping yesterday at Krogers. |
| | who, what, where, when | Tom had an accident on the Watterson Expressway Friday afternoon around 1 p.m.. |

| | | |
|---|---|---|
| 1. | who, what, where, when | Two police officers were patrolling Main Street last night. |
| 2. | who, what, where, when | They saw a fire at Frishe's Bowling Alley, 4113 Main St., at 3:32 a.m. today. |
| 3. | who, what, where | Firemen said the fire was confined to an office. |
| 4. | what, where, why | The fire failed to spread beyond the office because its walls were fireproof. |
| 5. | what | Evidence of arson was found. |
| 6. | who, what, why | Police said the thieves probably set the fire to hide the robbery. |
| 7. | what, how, where | The fire was started with oil soaked rags stuffed into a desk drawer. |
| 8. | who, what, how, where | Police discovered the evidence by sifting carefully through the debris of the office. |
| 9. | who, what | The owner of the building was contacted by the police to identify suspects. |
| 10. | who, what, where, when | Mr. Samuel Butler, owner of the bowling alley, identified two men who had been seen loitering near the office the day before the fire. |

UNIT 4 WORKSHEET D 1 CERTAIN KINDS OF QUESTIONS LEAD TO CERTAIN KINDS OF FACTS

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self directedness: suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

UNIT 4 WORKSHEET D1 CERTAIN KINDS OF QUESTIONS LEAD TO CERTAIN KINDS OF FACTS

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS Suitability | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|
| A 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| B 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| C 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

Ap - Actual Points

PP - Possible Points

UNIT TITLE: Guiding Research with Questions

Generic skill objectives:

To formulate questions which can help give one direction in answering a broader question, and which can provide necessary and sufficient data for answering the broad question.

---

Procedural skill objectives:

1. To use the various question types (who, what, etc.) in guiding consideration of a broader question.
2. To be able to develop a logical, thorough plan of questioning for answering a broader question.

Prerequisite procedural skills:

1. Ability to differentiate the kinds of information which various kinds of questions develop.

---

Concepts developed:

1. logical questioning
2. thorough questioning

Prerequisite concepts:

---

Readings and/or required supplemental materials:

Worksheet D 2

---

General description of unit activity (i.e., what the student does):

The student completes the worksheet at home for Unit 4, Part 2, and reviews his answers in a general class discussion. The object of the unit activity is to give the student practice in developing questions which will gather the kinds of data he feels is necessary to thoroughly explore a question. This will help prepare him for designing his own research.

This activity, which will be reinforced with later units, should take only 30 minutes. (You might want to make up more of this type of problem to give the student for homework after the unit.)

---

Teacher responsibilities and suggestions for instructor:

Remind students that this activity (D 2) will relate directly to his own research plan in the future.

Concentrate on the concept of thoroughness in asking questions that will develop necessary and sufficient data to answer a broad question.

Bring out the different kinds of questions, and orderings of questions asked by the students of the class for each common problem, and infer the adequacy of each plan of questions, and how they could be augmented.

Hand out Worksheet D 3 for homework.

Work to be handed in/evaluated:

Worksheet D 2 at the completion of the period.

The worksheet will be graded according to the criterion of suitability under SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Intersperse explanations with discussion.

TIME FOR STUDENT COMPLETION OF WORK: Before class or for homework afterwards.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 30 minutes.

---

How does this unit relate to previous and future work:

PREVIOUS: This part of the unit builds on D 1. It develops a broad appreciation of how a major question is answered through more particular questions, and continues the theme of the researcher in action.

FUTURE: The student begins to exercise himself in the development of logical related questions sequences which are thorough in their treatment of a broad question.

UNIT 4 WORKSHEET D 2 GUIDING RESEARCH WITH QUESTIONS

A. Below are research project ideas that actually have been pursued in recent years by social scientists. Read the description of each project idea and write several questions the researcher might ask to guide his search for the kind of information that will help him finish the project. (Use who, what, when, where, how, and why questions as well as, is, are, do, and can questions.)

Example:

Project Idea #1: To study the conditions that are conducive to the development of cooperative behavior in young school children.

Questions researcher might ask in study:

1. What kind of behavior is cooperative?
2. What is the best condition in a school to further cooperative behavior?
3. Is there a difference in behavior between boys and girls in the same kind of school setting?
4. Who is most responsible for creating a condition for cooperative behavior in the classroom, the teacher or the students?
5. How can conditions be created in a school to further cooperative behavior?
6. In the normal classroom, when is cooperation among all students the highest?

(These are typical questions which can guide research on this project idea. The researcher must select methods of investigation to answer these questions. You will study some of these methods in the next unit of the course: research methods such as behavioral observation, surveys, etc.. Now, you must only think of the kind of question which will help the researcher gather the kind of information he needs to do his project.)

Project Idea #2: To examine the non-verbal behavior of young children as it relates to their decision-making processes.

Questions researcher might ask in study:

Project Idea #3: To investigate whether obese children have a problem in achieving as well in school as normal weight children.

Questions researcher might ask in study:

Project Idea #4: To investigate the quality of a child's response to a stranger in various situations in order to see where the child has the most stable reaction.

Questions researcher might ask in study:

Project Idea #5: To study play from the point of view of the child in terms of the world of meaning he experiences in play situations.

Questions researcher might ask in study:

UNIT 4 WORKSHEET D 2 GUIDING RESEARCH WITH QUESTIONS

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| #2 (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |
| | | | | | | |
| (other) | | | | | | |
| (other) | | | | | | |
| #3 (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |
| | | | | | | |
| (other) | | | | | | |
| (other) | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| #4 (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |
| | | | | | | |
| (other) | | | | | | |
| (other) | | | | | | |
| #5 (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 4, Part 3 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Inferring Questions that Guide Research

Generic skill objectives:

To infer implicit questions which guide research activity in others.

---

Procedural skill objectives:

1. To be able to infer the implicit questions which led to research experiments by reading the reports.

Prerequisite procedural skills:

1. Ability to infer from facts.
2. Ability to develop and to recognize a logical, thorough plan of questioning in order to answer a broader question.

---

Concepts developed:

1. logical questioning
2. thorough questioning

Prerequisite concepts:

---

Readings and/or required supplemental materials:

Worksheet D 3 (and the entire article, if available: Barbara Ford, "New Evidence on Crowding," Science Digest, September 1975, pp. 28-36 ).

---

General description of unit activity (i.e., what the student does):

Students are given this worksheet as homework after the class discussion of D 1 and D 2. The next class should be used as an introduction of Unit #5 activity and Worksheet E 1. Thus, this worksheet is simply a homework assignment that will indicate some mastery of the concept of logical and thorough questioning.

Grade the worksheet and indicate through written or personal discussion with the student, his progress in this area.

---

Teacher responsibilities and suggestions for instructor.

View this worksheet as a test for comprehension of the unit. This worksheet and others that will be provided in future units are in addition to classwork and can serve as an indication of mastery of the major concepts of the particular unit.

---

Work to be handed in/evaluated:

Worksheet D 3

Score the worksheet according to the criterion of suitability under SELF-DIRECTEDNESS.

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: None

TIME FOR STUDENT COMPLETION OF WORK: Homework

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Perhaps 10 minutes at the beginning of the next class.

---

How does this unit relate to previous and future work:

PREVIOUS: It serves as a mastery test for the concepts of questioning taught in Unit 4.

FUTURE: It reinforces the idea of logical and thorough questioning which will guide the individual student project later in the course.

UNIT 4 WORKSHEET D 3 INFERRING QUESTIONS THAT GUIDE RESEARCH

Read the paragraphs below which describe research into the effects of human crowding and answer the questions which follow on the next page.

NEW EVIDENCE ON

CROWDING
bad for rats, good for people

If crowding is so bad,
why do people stand in
movie lines, attend
rock festivals and
stand shoulder to shoulder
at cocktail parties?

by Barbara Ford

Par. 1 "Crowding does have bad effects on rats, mice, lemmings, chickens and various other creatures but not on humans," asserts psychologist Jonathan L. Freedman of Columbia University, who lives and works in the nation's most crowded city, New York City.

Par. 2 Survey data like that cited by Freedman is intriguing but not really convincing, at least to most psychologists. They demand controlled "experimental" studies in the laboratory or field. But studies like this are a problem in human crowding. A psychologist obviously can't cram a few dozen people in a small room and leave them there for a few months to fight and copulate, as researchers have done with animals. But he can test short-term crowding of the kind humans regularly experience in subways and popular movies. In the late 1960s, when he was at Stanford University in California, Freedman and Stanford colleagues Paul R. Ehrlich and Simon Klevansky set up one of the first laboratory experiments to test human crowding.

Par. 3 They directed nine volunteers to work on a variety of tasks - some simple, others complex - for four hours in large and small rooms. All the subjects sat on wooden chairs with writing arms. The small room was just 35 feet square.

Par. 4 To their surprise, the crowded subjects did just as well as the uncrowded ones. After moving to Columbia, Freedman directed another study with Alan S. Levy, Roberta W. Buchanan and Judy Price. This time, all-male and all-female groups played games requiring cooperation. Again, the results were surprising. In the small room, the males were much more competitive, just like the subjects in the animal studies. Females, however, were much more cooperative. To test this unexpected sex difference, the Freedman team set up a crowding experiment with a mock jury trial. All-female groups in the small room gave much lighter sentences than all-male groups. But when a mixed group occupied the small room, the males reduced the severity of their sentence!

1. What was the main question Freedman, Ehrlich, and Klevansky attempted to answer with the research experiment described in Par. 3?

2. What were some smaller questions Freedman and his associates asked which led to the particular design of the experiment described in Par. 3?

3. What question led to the creation of the first experiment described in Par. 4 (cooperative games)?

   How does this question help Freedman and his associates answer the main question (which you identified in #1)?

4. What question led to the creation of the second experiment described in Par. 4 (jury trials)?

   How does this question help Freedman and his associates answer the main question (which you identified in #1)?

UNIT 4 WORKSHEET D 3 INFERRING QUESTIONS THAT GUIDE RESEARCH

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

UNIT 4 WORKSHEET D 3 INFERRING QUESTIONS THAT GUIDE RESEARCH

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| 1 | | | | | | |
| 2 | | | | | | |
| 3a | | | | | | |
| b | | | | | | |
| 4a | | | | | | |
| b | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 5 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Social Science Methods of Investigation

Generic skill objectives:

To acquaint the student with the names and definitions of six basic inquiry methods of the social sciences.

To enable the student to identify these six basic inquiry methods at work when either their practice or results are reported.

---

Procedural skill objectives:

1. To identify the presence of one of the six inquiry methods of social science in the reported activity and results of research.

Prerequisite procedural skills:

1. Inferring from data.

---

Concepts developed:

1. Inquiry method
2. Behavioral observation
3. Testing performance
4. Survey
5. Physical tests/measurement
6. Cultural analysis
7. Statistical analysis

Prerequisite concepts:

1. Fact
2. Evidence

---

Readings and/or required supplemental materials:

For this introductory activity in the inquiry methods, use only Worksheet E and the other parts of the Barbara Ford article on crowding, if available.

Save the supplementary reading on inquiry methods for later units on each method.

---

General description of unit activity (i.e., what the student does):

This unit activity should be done in class from beginning to end, for it is the introduction to the several inquiry methods of social science. The student completes the questions after an initial lecture/discussion on the methods; you review the answers to each question with the students after giving them 15 minutes of class time to complete the worksheet.

---

Teacher responsibilities and suggestions for instructor:

Prepare for this class by doing reading on the six inquiry methods (see Suggested Readings/Inquiry Methods in the manual's bibliography).

Do not overwhelm the students with outside readings on the methods at this time. The students are freshmen or sophomores in college; it is important for them to understand the inquiry methods as you describe them. They will have intensive reading and practice in each method in future units.

Included with the worksheet is a hand-out that more fully describes the kind of activity produced by the inquiry method and the type of fact produced.

Work to be handed in/evaluated: It may be used in the lecture/discussion on the methods.

Worksheet E. Score the worksheet in terms of the criterion suitability under SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Approximately 25-30 minutes.

TIME FOR STUDENT COMPLETION OF WORK: Approximately 15 minutes.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Approximately 10 minutes.

---

How does this unit relate to previous and future work:

PREVIOUS: The idea of activity to develop an empirical fact and to establish evidence was introduced in Unit 2 when the concepts of research, data, and objectivity were considered. Unit 3 focused on fact and evidence in more depth. Now the forms of inquiry used to produce these facts in the social sciences are introduced.

FUTURE: At least four of these methods, behavioral observation, survey, cultural analysis, and statistical analysis, will be used by the student in his independent research project. This overview allows a general appreciation of the several forms of inquiry which can be used by the social scientist to answer a question.

UNIT 5 WORKSHEET E SOCIAL SCIENCE METHODS OF INVESTIGATION

There are six major methods used by social scientists to investigate human behavior:

(1) behavioral observation

observing the actions of human and non-human subjects in order to gather accurate behavioral data.

(2) testing performance

measuring the mental, emotional, and physical performance of human and non-human subjects in a structured task or environment.

(3) survey

interviewing people to determine their attitudes and opinions.

(4) physical tests/measurements

analyzing physical artifacts and measuring physiological signs.

(5) cultural analysis

studying the language, art, religion, and other folkways of a culture in order to understand the background for human behavior.

(6) statistical

collecting, organizing, and interpreting numerical data gathered by any of the above methods.

For each of the four research studies listed below (from the Crowding reading), indicate what type(s) of method is being used by the social scientist in his investigation.

| | Method(s) |
|---|---|
| A. Study of population and crime | |
| B. Study of !Kung tribesman | |
| C. Study of cognitive labels | |
| D. Study of the effect of architecture | |

Residents of New York, Tokyo and other crowded urban areas do not show the extreme reactions of crowded animals, he points out. There's evidence, in fact, that the most populous cities in this country have a lower crime rate than somewhat less crowded cities. New York, with the nation's greatest density (the number of people per square mile) has a much lower crime rate against persons than either Los Angeles or Chicago, both of which have lower densities than New York. And Hong Kong, one of the world's most densely populated cities, has half the crime rate of New York. The most recent FBI crime figures for the six most populous cities in the United States show New York first in population but fifth in crime. Detroit, fifth in population, is first in crime rate. The real source of our urban ills, believes Freedman, lies not in crowding but in discrimination, poverty, inadequate housing, drug abuse, alcoholism and other conditions.

Research Study A

Population and Crime

The most crowded living conditions in the world are found in:

a) a New York City tenement

b) a one-room house in a Rio de Janeiro slum

c) a Hong Kong sampan-houseboat

d) a !Kung bushmen camp on the Kalahari Desert of Africa

The right answer is the !Kung camp. The !Kung (the exclamation point stands for a click in the spoken language) are a tribe of hunter-gatherers who voluntarily set up their camps so that those inside are jammed into a tiny central area. Arms and legs are usually touching and women hand food back and forth as they cook. The density of the camps, figures University of New Mexico anthropologist Patricia Draper, who lived among the !Kung, is about 30 people to the room, or 180 square feet per person.

Research Study B

!Kung Tribesmen

But crowding doesn't seem to affect the !Kung's health. Their blood pressure is low and doesn't rise with age, Draper found, and their serum cholesterol levels are among the lowest in the world.

Research Study C

Cognitive Labels

On a crowded subway or bus, he says, people are aroused, but the cognitive label is "bad." At an equally crowded cocktail party, the cognitive label is "good." Rock festivals, Epstein believes, are a prime example of a situation to which the participants attach a good cognitive label. "Woodstock and Watkins Glen were extremely crowded situations. Yet the Woodstock Festival has come to connote an image of love and peace. At both festivals, despite a great deal of physical discomfort, participants have largely reported an intense sense of community with an affection for others present." Both festivals, he feels, were times when crowded groups "became cohesive and cooperative groups as did the crowded women in our studies and Freedman's."

Research Study D

Effect of Architecture

Architecture can also foster more control over the environment, believes Baum. In another dorm he studied, students in suites - a number of interconnected rooms occupied by three or four students in a typical corridor-style dorm. Again, Baum believes, the arrangement served as a shield to ward off unwanted interactions. In an earlier study, he found that even a small touch, like pictures on the wall of a dormitory room, makes students feel less crowded. "Pictures give students something else to look at than each other," he explains.

| Form of Inquiry | Investigator's Activity | Type of Fact Produced |
|---|---|---|
| behavioral observation | using human senses, primarily vision, to describe, identify, and record behavioral data. | a report or record that describes, identifies, classifies behavioral data. |
| survey | asking questions formulated in advance (oral or written). | a record of human thought. |
| testing of performance | having subject perform a structured activity or behave in a structured environment. | activity classified by standards applied by investigator. |
| physical tests/ measurements | analyzing/measuring the composition, size, weight, and other physical aspects of human and non-human subjects and artifacts. | a physical characteristic described, categorized, or quantified. |
| cultural analysis I | locating and identifying the purposes, forms, causes, and composition of cultural activities, such as law, art, religion, politics, etc.. | exposition of cultural behavior and artifacts. |
| cultural analysis II | relating the specific activity, thought, performance, physical characteristic, or product of a subject of the cultural form it expresses, or a cultural law that causes it. | behavior or thought classified by a cultural form or law |
| statistical | collecting, organizing, manipulating, and interpreting numerical data derived from the above forms of inquiry. | numerical data expressed as descriptive and inferential statistics. |

UNIT 5 WORKSHEET E SOCIAL SCIENCE METHODS OF INVESTIGATION

There are six major methods used by social scientists to investigate human behavior:

(1) behavioral observation

observing the actions of human and non-human subjects in order to gather accurate behavioral data.

(2) testing performance

measuring the mental, emotional, and physical performance of human and non-human subjects in a structured task or environment.

(3) survey

interviewing people to determine their attitudes and opinions.

(4) physical tests/measurements

analyzing physical artifacts and measuring physiological signs.

(5) cultural analysis

studying the language, art, religion, and other folkways of a culture in order to understand the background for human behavior.

(6) statistical

collecting, organizing, and interpreting numerical data gathered by any of the above methods.

For each of the four research studies listed below (from the Crowding reading), indicate what type(s) of method is being used by the social scientist in his investigation.

| | Method(s) |
|---|---|
| A. Study of population and crime | 5, 6 |
| B. Study of !Kung tribesman | 1, 4, 5, 6 |
| C. Study of cognitive labels | 3, 5 |
| D. Study of the effect of architecture | 1, 2, 3, 5 |

UNIT 5 WORKSHEET E SOCIAL SCIENCE METHODS OF INVESTIGATION

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

UNIT 5 WORKSHEET E SOCIAL SCIENCE METHODS OF INVESTIGATION

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| A (1) | | | | | | |
| (2) | | | | | | |
| B (1) | | | | | | |
| (2) | | | | | | |
| (3) | | | | | | |
| (4) | | | | | | |
| C (1) | | | | | | |
| (2) | | | | | | |
| D (1) | | | | | | |
| (2) | | | | | | |
| (3) | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 6 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Cultural Analysis

Generic skill objectives:

To enable the student to conduct a pre-research cultural analysis of the social world to which his research question refers.

---

Procedural skill objectives:

1. Identifying the various persons, places, things, and events which make up the social world in which the research will take place.
2. Phrasing questions that will help answer the larger question.
3. Locating information about the social world elements and the research question(s) in a library.

Prerequisite procedural skills:

1. Ability to recognize inquiry skills appropriate for gathering certain kinds of information.

---

Concepts developed:

1. cultural analysis (pre-research, post-research)
2. social world, societal background, societal context.

Prerequisite concepts:

1. inquiry methods

---

Readings and/or required supplemental materials:

Worksheet F; various articles and the prefaces of books that are located in answering problems.

---

General description of unit activity (i.e., what the student does):

As in the previous class, this worksheet is introduced and completed as far as Problem #1 in the class itself. The model question and the four steps of the pre-research cultural analysis are explained in detail. Problem #1 is done with time for an in-class writing interval to prepare answers and discussed before the class ends.

Homework will be Problem #2. Warm up the students for Problem #2 by reviewing Steps 1 and 2 of the cultural analysis with them. The students are responsible for locating information in a library for Step 3 and Step 4, writing the smaller questions which will help answer the larger question.

Teacher responsibilities and suggestions for instructor:

Explain the importance of the pre-research and post-research cultural analysis in bringing the researcher's personal viewpoint and existing knowledge to a question. Emphasize the hesitation to use "why" questions before research into a question is done; the social scientist may ask the several what, where, when, how, who questions in order to enlarge the social world in which he may seek, but he must not jump to causal conclusions of why things happen until the evidence is collected.

Read one or two of the articles, monographs, or books listed in Step 3 of the example so that you can lead an informed discussion on the topic. Give a careful introduction to Problem #2, going over Step 2.

---

Work to be handed in/evaluated:

Problem #2 will be handed in the next class. It will be scored according to the three criteria of SELF-DIRECTEDNESS.

The answers of Problem #1 are simply in-class review of the relationship between a question and the inquiry methods which can be used to gather information to answer the question. You may score this (or not) according to the criterion of <u>suitability</u> under SELF-DIRECTEDNESS.

---

Two Class Periods

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 20-25 minutes in each class.

TIME FOR STUDENT COMPLETION OF WORK: Problem #1 (15 minutes), Problem #2 (homework).

TIME FOR CLASSROOM REVIEW AND ANALYSIS: Problem #1 (15-20 minutes), Problem #2 (most of class).

---

How does this unit relate to previous and future work:

PREVIOUS:

1. The discussion of cultural analysis provides an in-depth study of this inquiry method introduced in Unit 5.
2. The review of several inquiry methods in Problem #2 will allow reinforcement of their definitions and purposes.

FUTURE:

1. Students should realize that research begins with a thorough cultural analysis of the social world to which the research question refers.
2. The next unit activity (Unit 7) and worksheet will be a pre-research cultural analysis that begins to create the societal background knowledge for the student's independent research project.

Cultural analysis is locating and identifying the purposes, forms, causes, and composition of cultural activities, such as law. art, religion, politics, etc.. Cultural analysis is the study of the societal background or context of human behavior.

Cultural analysis is the study of the social world in which the question you wish to research occurs. The social world is the places, persons, things, and events in which human behavior takes place.

(societal background, societal context, and social world are synonyms)

---

You can make both a pre-research and a post-research cultural analysis. You will learn the steps of a pre-research cultural analysis in this worksheet.

1 - A pre-research cultural analysis enables you to express basic beliefs and knowledge that you have already about the social world of your research interest.

The pre-research analysis will help you see what you know and it will help you state some preliminary questions that will guide where and how you will do your research.

2 - A post-research cultural analysis is based on the facts you have gathered. The post-research analysis allows you to interpret your data, and in some cases, establish the cause (the why) of what you investigated. Finally, the post-research cultural analysis allows you to make some inferences about the social importance of what you found in your research.

---

The 4 Steps of the Pre-Research Cultural Analysis

Step 1: State the question you wish to research completely.

Step 2: Consider what you are trying to answer and list all the persons, places, things, and events involved in the question from your prior belief and knowledge.

An aid to this step is to use the basic who, what, where, when, and how questions to prime your imaginative recall of the social world of your question. (Do not use a why question until after your research.)

For example: Who was involved in the question you are going to research?
What kinds of persons, places, things, and events have you known to be involved in the question?
Where have these been? When have these happened?
How have they occurred?

Step 3: Locate articles, books, etc., which will give you more information on the several kinds of persons, places, things, and events developed in Step 2.

(This library research can be aided by the reference librarian in your college or public library.)

National Institue of Education, Violent Schools--Safe Schools, The Safe School Study Report to the Congress, 3 Vols., Washington, D.C.: Dept. of Health, Education and Welfare, January, 1978.

Step 4: Develop some smaller questions about your future research from the information you produced in Step 2. Step 2 has given you more precise information about the social world your to-be-researched question will occur in.

The smaller questions you develop now will guide where and how you do your research.

---

A Sample Pre-Research Cultural Analysis Appears Below:

Step 1: (Question to be research): How serious is the problem of crime and disruption in the public schools nationally?

Step 2: (Persons, place, things, and events involved with question from prior knowledge):

Who: (specific persons): Senator Birch Bayh who made a report on the question.

What kind of person, place, thing, or event: (general idea):
students; teachers; principals; school security guards; parents; gangs. (Persons)
Occurred in schools; in schoolyards; on way home from school; in school cafeterias; in classrooms. (Places)
Windows were broken; students were attacked; fires were set; money was stolen. (Events)
Weapons used to attack; personal threats; unarmed physical violence. (Things)

Where: (specific places): I remember seeing a student attacked by a gang of girls on a bus on the way home from school, the girls were not from the school the male student who was attacked attended; I have heard that most rapes of teachers occur in hallways on the top floor of school buidlings.

When: (specific times): Most attacks on students occur in the hour before or after school, according to my reading; most damage to school property occurs during basketball games and vacations.

How: (specific actions): female teachers are attacked by one or two males outside of the classroom in unarmed assault, or with a knife, according to newspaper reports; windows are broken with thrown objects, for the most part, according to reports.

Step 3: I located the following list of articles and books on the subject:

Step 4: (Smaller questions to help answer major research question in Step 1; these questions are developed with the help of information listed in Step 2 and the additional information I collected in Step 3.)

a. What are the most serious crimes that occur in schools?
b. Do the most serious crimes occur in elementary or secondary schools?
c. Where can I find past research reports that list the kinds of crimes that occur in schools across the country?
d. How many schools, students, and teachers are affected, in what ways, and to what extent?
e. When and where are the risks of crime and violence the highest?
f. How do crimes occur in schools?
g. What measures of prevention do students, teachers, and principals recommend?

These smaller questions will help guide the beginning of research into the main question: "How serious is the problem of crime and disruption in the public schools nationally?".

The questions also suggest how someone will do the research, i.e., what method of inquiry will be used. Remember, you can use the methods of behavioral observation, survey, performance testing, physical/artifactual testing, statiscal analysis, and further cultural analysis (which would include library research).

Each inquiry method gives you a different kind of fact (see Unit 5). Each inquiry method involves you in a different kind of activity (see Unit 5). What kinds of inquiry methods would be most appropriate for answering the questions in Step 4?

Problem #1 What inquiry methods could be used to answer each of the smaller questions listed in Step 4? For each of the questions listed in Step 4, state what methods could be used to answer the question, and why the method would be useful in developing the needed information.

a. 1 Methods

a. 2 Why useful in developing the needed information:

b. 1 Methods

b. 2 Why useful in developing the needed information:

c. 1 Methods

c. 2 Why useful in developing the needed information:

d. 1 Methods

d. 2 Why useful in developing the needed information:

e. 1 Methods

e. 2 Why useful in developing the needed information:

f. 1 Methods

f. 2 Why useful in developing the needed information:

g. 1 Methods

g. 2 Why useful in developing the needed information:

Problem #2 What are the most popular forms of entertainment among youth nationally?

Apply the four step method of cultural analysis to this question.

UNIT 6 WORKSHEET F CULTURAL ANALYSIS

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: economy, originality, suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Economy (Problem #2, Steps 2 and 4)

(4) The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) The response must be limited both in length and kind in order to make further work possible.

(1) The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement.

2. Originality (Problem #2, Steps 2, 3, and 4)

(4) The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) The response is inadequate to a degree which calls for tutorial intervention to help individual think of meaningful responses.

3. Suitability (Problem #1 and Problem #2)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

UNIT 6 WORKSHEET F CULTURAL ANALYSIS

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| Problem #1 a.1 | | | | | | |
| a.2 | | | | | | |
| b.1 | | | | | | |
| b.2 | | | | | | |
| c.1 | | | | | | |
| c.2 | | | | | | |
| d.1 | | | | | | |
| d.2 | | | | | | |
| e.1 | | | | | | |
| e.2 | | | | | | |
| f.1 | | | | | | |
| f.2 | | | | | | |
| g.1 | | | | | | |
| g.2 | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 6 WORKSHEET F CULTURAL ANALYSIS

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | AP | PP | % |
| Problem #2 - Step 2 | | | | | | |
| (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| - Step 3 | | | | | | |
| (evaluation of total effort) - Step 4 | | | | | | |
| (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| | | | | | | |
| (other) | | | | | | |
| (other) | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 6 WORKSHEET F

ANSWERS

Problem #1 What inquiry methods could be used to answer each of the smaller questions listed in Step 4? For each of the questions listed in Step 4, state what methods could be used to answer the question, and why the method would be useful in developing the needed information.

a. 1 Methods Survey, statistical analysis

a. 2 Why useful in developing the needed information: Surveys of the schools nationally would allow a broad gathering of information about what is perceived as most serious crimes. Inference form statistical data collected from the surveys will allow judgements to be made about what crimes rank most serious in the United States.

b. 1 Methods Survey, statistical analysis

b. 2 Why useful in developing the needed information: Again, surveys of the elementary and secondary schools, using a broad sample of schools, will provide the necessary information. Analysis of the statistics will allow a definitive answer to the question.

c. 1 Methods Survey, cultural analysis

c. 2 Why useful in developing the needed information: You can ask educators who might know, to give you reference sources. You can search library collections for references.

d. 1 Methods Survey, statistical analysis

d. 2 Why useful in developing the needed information: As in a and b, a survey of broad national sample will give you information and analysis of statistics will provide definitive answers.

e. 1 Methods Survey, statistical analysis

e. 2 Why useful in developing the needed information: Same as a, b, and d.

f. 1 Methods Survey, behavioral observation, statistical analysis

f. 2 Why useful in developing the needed information: Use survey of a broad sampling of schools, but also select a representative for the same reasons as you did in above surveys. But, here you can add actual behavioral observation in sample schools to gather firsthand facts that may be more detailed and thorough as to cause than you can get through survey.

g. 1 Methods Survey

g. 2 Why useful in developing the needed information: You must get opinions from these people that will adequately satisfy your questions.

Problem #2 What are the most popular forms of entertainment among youth nationally?

Apply the four step method of cultural analysis to this question.

UNIT 7 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Cultural Analysis of a Learning Situation (Pre-Research)

Generic skill objectives:

To enable the student to conduct a pre-research cultural analysis of the social world to which his research question refers.

---

Procedural skill objectives:

1. To visualize past learning situation and analyze its strengths and weaknesses.
2. To state a concept that explains a strength or weakness of the learning situation.

Prerequisite procedural skills:

1. Inferring from facts.

---

Concepts developed:

See Unit 6

Prerequisite concepts:

1. pre-research cultural analysis

---

Readings and/or required supplemental materials:

Worksheet G

---

General description of unit activity (i.e., what the student does):

Student completes Worksheet G at home. He has the sample answer sheet to refer to. Stress the importance of originality and a personal experience that is reported on Worksheet G.

This activity begins student concentration on the elements of learning situation.

In the discussion of completed work, have as many students as possible contribute to discussion.

---

Teacher responsibilities and suggestions for instructor:

The Unit 7 activity is a variation of the more formal pre-research cultural analysis of Unit 6. Point this out to the student. As with any step by step procedure, the purpose is to achieve an outcome; in Unit 7 you simply wish to begin a reflective process on education that will continue in later units.

Dwell on the purpose and varieties of education. Suggest diverse educational settings which could be explored by students in future projects. Read some articles on learning environments to prepare for this class. (See Bibliography.)

Work to be handed in/evaluated:

Worksheet G; score it according to the three criteria of SELF-DIRECTEDNESS. (Economy is when only one clear concept occurs in each response.)

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Approximately 10 minute introduction at the end of the second day of Unit 6 activity.

TIME FOR STUDENT COMPLETION OF WORK: Homework.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: The entire next period. (Include your own examples of learning situations.)

---

How does this unit relate to previous and future work:

PREVIOUS: This more informal pre-research cultural analysis reinforces the purpose of such analysis to bring to light personal biases and assumptions; thus, it reinforces the concepts of the previous unit.

FUTURE: The independent research of the student will be on a question concerning learning situations; therefore, this unit begins student analysis of the elements he will be dealing with.

UNIT 7 WORKSHEET G

## Cultural Analysis of a Learning Situation

The purpose of the method of cultural analysis is to express your understanding of the events you study before you use the more empirical methods of behavioral observation, survey, etc..

When you are able to look at your basic assumptions that you bring half-consciously to any situation, then you can use these assumptions to help you plan a more responsible, careful research plan.

We all have basic assumptions about the learning situation by the time we are in college. After all, we have already spent about 13 years in formal learning situations. These basic assumptions are often dimly felt by us and not yet put into words. This work sheet will help bring out the basic assumptions you have about the learning situation.

1. Introspecting on the Learning Situation

   Think of the most interesting class you had in high school.

   a. What was the subject? _____

   b. Who taught it? _____

   c. How many students, approximately, were in the class? _____

   d. Recreate the spatial design of the average class:

      x for teacher
      △ for your usual place in the room
      0 for other students
      □ for desks
      ▭ for tables

2. Describing the Positive and Negative Learning Situations in the Class

   --Write 5 sentences that describe how the class was interesting.

a.

b.

c.

d.

e.

--Write 5 sentences that describe negative aspects of the class.

f.

g.

h.

i.

j.

3. Looking for Answers to Questions About Learning

--Everyone has ideas on how things could be better. Before we ask new questions, it is helpful to state our old answers. They may help us develop a research plan.

Write 5 ways the class you describe above could have been improved to increase learning.

a.

b.

c.

d.

e.

4. Naming behavioral elements (variables) of the learning situation.

List below, in one or two words, the 3 most important teacher behaviors and the 3 most important student behaviors in the learning situation. Also, the 3 most important characteristics of the classroom setting.

| Teacher | Student | Classroom Setting |
|---|---|---|
| a. | d. | g. |
| b. | e. | h. |
| c. | f. | i. |

SAMPLE WORKSHEET

## Cultural Analysis of a Learning Situation

The purpose of the method of cultural analysis is to express your understanding of the events you study before you use the more empirical methods of behavioral observation, survey, etc..

When you are able to look at your basic assumptions that you bring half-consciously to any situation, then you can use these assumptions to help you plan a more responsible, careful research plan.

We all have basic assumptions about the learning situation by the time we are in college. After all, we have already spent about 13 years in formal learning situations. These basic assumptions are often dimly felt by us, and not yet put into words. This work sheet will help bring out the basic assumptions you have about the learning situation.

1. Introspecting on the Learning Situation

   Think of the most interesting class you had in high school.

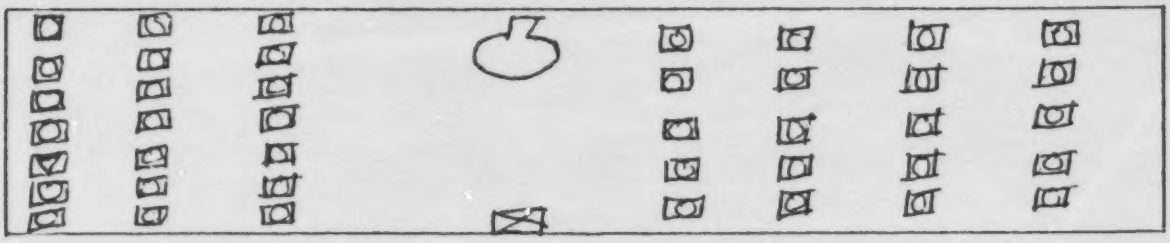
   a. What was the subject? Spanish (8th grade)

   b. Who taught it? Mrs. Webber

   c. How many students, approximately, were in the class? 40

   d. Recreate the spatial design of the average class:

      x for teacher
      △ for your usual place in the room
      0 for other students
      □ for desks
      ▭ for tables
      ⬭ for pot-bellied stove



2. Describing the Positive and Negative Learning Situations in the Class

   --Write 5 sentences that describe how the class was interesting.

a. The class was eager to learn a foreign language.

b. Our teacher, Mrs. Webber gave each of us a Spanish name.

c. It was fun trying to pronounce our class-mates new name.

d. We had a play in Spanish that we presented to the eight grade students.

e. We made Spanish costumes and prepared spanish meals in class.

--Write 5 sentences that describe negative aspects of the class.

f. The room gets cold when the fire burns low.

g. In the summer we have to raise the windows.

h. The noise from the traffic interrupts the class.

i. Flies and other bugs fly in the open windows.

j. The students have to go to the main bldg. to use the rest-room.

3. Looking for Answers to Questions About Learning

--Everyone has ideas on how things could be better. Before we ask new questions, it is helpful to state our old answers. They may help us develop a research plan.

Write 5 ways the class you describe above could have been improved to increase learning.

k. Smaller class

l. Enough books to go around

m. Conditions inside to fit the weather conditions

n. Instead of being outside in a portable we could have been in the main bldg.

o. Up-grade the schools.

4. Naming Behavioral Elements (variables) of the Learning Situation.

List below, in one or two words, the 3 most important teacher behaviors and the 3 most important student behaviors in the learning situation. Also, the 3 most important characteristics of the classroom setting.

| Teacher | Student | Classroom Setting |
|---|---|---|
| 1. Creative approach | 4. Participation | 7. Friendly |
| 2. Shares knowledge | 5. Eager (enthusiasm) | 8. Overcrowded |
| 3. Concerned with individuals | 6. Trying | 9. Cold |

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Self-directedness: economy, originality, suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Economy (All of 2, 3, and 4)

(4) The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) The response must be limited both in length and kind in order to make further work possible.

(1) The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement.

2. Originality (All of 2, 3, and 4)

(4) The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

3. Suitability (all answers on worksheet)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of unit activity and worksheet.

UNIT 7 WORKSHEET G CULTURAL ANALYSIS OF A LEARNING SITUATION

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | | Originality | Economy | Suitability | | AP | PP | % |
| 1 a | | NA | NA | | | | | |
| b | | NA | NA | | | | | |
| c | | NA | NA | | | | | |
| d | | NA | NA | | | | | |
| 2 a | | | | | | | | |
| b | | | | | | | | |
| c | | | | | | | | |
| d | | | | | | | | |
| e | | | | | | | | |
| f | | | | | | | | |
| g | | | | | | | | |
| h | | | | | | | | |
| i | | | | | | | | |
| j | | | | | | | | |
| 3 a | | | | | | | | |
| b | | | | | | | | |
| c | | | | | | | | |
| d | | | | | | | | |
| 4 a | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 7 WORKSHEET G CULTURAL ANALYSIS OF A LEARNING SITUATION

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | | Originality | Economy | Suitability | | AP | PP | % |
| 4 a | | | | | | | | |
| b | | | | | | | | |
| c | | | | | | | | |
| d | | | | | | | | |
| e | | | | | | | | |
| f | | | | | | | | |
| g | | | | | | | | |
| h | | | | | | | | |
| i | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 8, Parts 1&2 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Concepts

Generic skill objectives:

1. Developing coherent concepts of behavior from more discursive judgements.
2. Learning the value of objectivity and clearly defined criteria in measuring a concept.

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Procedural skill objectives:

1. Transforming a judgemental statement about a behavior into a noun or noun phrase which can serve as a concept for general measurement.
2. Measuring a concept (making judgements) empirically based on personal criteria.

Prerequisite procedural skills:

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Concepts developed:

1. coherent concept (noun or noun phrase)
2. variable
3. criteria (for definition, measurement, etc.)

Prerequisite concepts:

1. objectivity
2. subjectivity
3. empirical

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Readings and/or required supplemental materials: Labovitz and Hagedorn, Introduction to Social Research. (Chapter 2)
Mck. Agnew and Pyke, The Science Game: An Introduction to Research in the Behavioral Sciences, second edition. (Chapter 2)

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General description of unit activity (i.e., what the student does):

The student completes Worksheet H 1 for homework after the conclusion of the Unit 7 activity. In the first third to half of the next class the concept development activity of H 1 is reviewed.

Worksheet H 2 guides the balance of the class activity: the measurement of a concept--appearance--by each student viewing each other. The instruction for this class activity are detailed on the attached Instructions for Teacher.

Teacher responsibilities and suggestions for instructor:

Make clear the process of both neutralizing and making into a noun the judgement of the student in order to arrive at a concept, which can be used by a social scientist (the student in this case) to explain events in a measurable manner. Give various examples of how a coherent concept can help one to see and to explain scientifically human behavior. (Worksheet H 1.)

The class activity built around Worksheet H 2 is designed to demonstrate the subjectivity of judgements and the necessity of clearly defined criteria in measuring a concept. Pay special attention to the logic of the criteria the student uses in defending his three categories on Worksheet H 2. Each criterion of dress should not only be logical in itself, but across the three categories so that a continuum is justified.

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Work to be handed in/evaluated:

Worksheets H 1 and H 2 (the criteria for judgements made).

Worksheet H 1 will be scored according to the criterion of PURPOSIVENESS (clarity and coherence).

Worksheet H 2 will be scored according to the criterion of PURPOSIVENESS and SELF-DIRECTEDNESS.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 20 - 25 minutes (explanation of H 2 activity).

TIME FOR STUDENT COMPLETION OF WORK: 15 minutes (H 2 activity).

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 15 - 20 minutes (review of H 1).

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How does this unit relate to previous and future work:

PREVIOUS: In Unit 7, the students have made judgements about past learning situations. At the end of the activity they wrote the key ideas of teacher and student behaviors and the kind of classroom setting which contributed to positive and negative experiences. In this unit, the "key ideas," i.e., one or several words which give the idea, are shown to be best expressed as a coherent concept, one that is free of emotional bias, and clearly expressed as a noun that can serve to guide measurement.

FUTURE: In future units, the student will put his thoughts into concepts that can serve to guide research. His research question will consist of two major concepts that will be measured with his inquiry instruments. The student will be required to define the criteria whereby his concept is measured and then design instruments to make these measurements. Worksheet H 2 will be the first step in this direction.

A concept is a term (one or several words) used by social scientists to refer to an idea they wish to study. In Unit 7, Worksheet G (Part 4) you began to develop concepts which could be used to study interaction between teacher and student in a classroom setting. Here we will develop and define your concepts more exactly.

The definition of many concepts begins by observing (or remembering) and describing behavior. In Unit 7, Worksheet G (Part 4) you listed descriptive terms referring to the teacher, students, and classroom setting of a learning situation. Your list might have looked like this:

| TEACHER | STUDENTS | SETTING |
|---|---|---|
| 1. Concerned with individuals | 1. Answer and ask many questions | 1. Overcrowded |
| 2. Pleasing personality | 2. Dress casually | 2. Desks arranged neatly in rows |
| 3. Strict | 3. Eager to learn | 3. Room too hot |

These words are the result of reflecting on a situation and reducing observations and memories to a few descriptive terms.

In order to turn these descriptive terms into usable social scientific concepts--concepts which can be employed in research which measures and compares varied learning situations--a few additional steps are necessary.

FIRST, because your descriptions are remembered from actual situations (and are therefore, either positive or negative), they must be "neutralized," stripped of their emotive or judgemental qualities.

> For example, "overcrowded" is clearly negative--the person who used it felt there were too many people in the class for the size of the room. The neutral, non-judgemental way to refer to how well filled the room is with students might be called "class density." Likewise, "room too hot" could be changed to "temperature."

SECOND, concepts are best stated as nouns, as things: "dress casually" (a verb and adverb) can be called "dress" or "clothing" (a noun); "strict" (an adjective) could be translated into "discipline," "kind of discipline," or "amount of discipline" (all nouns or noun phrases).

Below are groups of descriptive words. Turn each into a concept by "neutralizing" its emotional or judgemental value and making it a noun or a noun phrase.

| | |
|---|---|
| 1. students ask and answer many questions | 1. CONCEPT: class participation |
| 2. concerned with individual | 2. CONCEPT: |
| 3. pleasing personality | 3. CONCEPT: |
| 4. desks arranged neatly in rows | 4. CONCEPT: |
| 5. goes to church every week | 5. CONCEPT: |
| 6. doesn't watch the road carefully while driving an automobile | 6. CONCEPT; |

| | | |
|---|---|---|
| 7. | hair neatly combed | 7. CONCEPT: |
| 8. | comes to class 45 minutes after class begins | 8. CONCEPT: |
| 9. | knows the answer to every question | 9. CONCEPT: |
| 10. | shakes head and waves arms angrily | 10. CONCEPT: |

UNIT 8 WORKSHEET H 1 ANSWERS

2. concern, or personal concern, or kind of concern,or interest
3. personality, or kind of personality, or temperament
4. seating arrangement, or room design
5. church attendance, or religious observation, or religious interest
6. driving habits, driving practices
7. grooming, appearance
8. promptness, tardiness, or punctuality
9. intelligence, or knowledge level, or preparedness
10. body movements, or non-verbal language, or kinesis

## APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence

## OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness (all answers)

   a. Clarity of concept, definition, statement

   (4) - The concept is stated in no more than three words; it is free of emotional connotations and stated as a noun.

   (3) - Errors occur, but the meanings are clear enough to allow correction of basic ideas presented.

   (2) - Major work on emotional tone and the use of nouns is required in order to allow for further work.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to check for comprehension of task.

UNIT 8 WORKSHEET H 1 CONCEPTS IN SOCIAL SCIENCE

| WORKSHEET QUESTIONS/ PROCEDURES | PURPOSIVENESS | |
|---|---|---|
| | Clarity | Coherence |
| 2 | | NA |
| 3 | | NA |
| 4 | | NA |
| 5 | | NA |
| 6 | | NA |
| 7 | | NA |
| 8 | | NA |
| 9 | | NA |
| 10 | | NA |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

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AP - Actual Points

PP - Possible Points

INSTRUCTIONS TO TEACHERS UNIT 8 WORKSHEET H 2

1. Discuss (in review) concepts, mentioning those concepts students isolated in the cultural analysis and on the last worksheet.

2. Discuss variables (and, in passing, constants), stressing the value to social scientists of variables in formulating principles in the behavioral sciences (e.g., fixing insurance rates by age, sex, health, driving habits, smoking habits; predicting product sales through knowledge of the characteristics of the intended consumers).

3. Set up class demonstration in which students will measure variations in a concept. Do not specifically define what POOR or WELL DRESSED means. If students ask, sidestep the question or answer it vaguely. The point of the exercise is to impress upon students the dangers of subjectivity in research.

4. Distribute worksheets. Explain how to keep records with harsh marks.

5. Have each student, one at a time, go to the front of the room. To soften the impact, each student could be asked to write a number (beginning with 1) on the blackboard and to erase the previous number.

6. After the students have completed their ratings, have them fill in the table at the bottom. The three numbers in the "total" column, added down, should be the same for all students. When they aren't, stress the importance of care and accuracy in doing observations.

7. Compare results as follows:

   How many of you had your highest total number in the row marked:

   POORLY DRESSED?
   SATISFACTORILY DRESSED?
   WELL DRESSED?

   How many had your lowest total in each of these rows (place response--hand counts--next to the highest total numbers.

   If the numbers differ, ask questions and start discussion on specific items; "Since we were all looking at the same people, why is it that 10 people had most students rated as poorly dressed, while 5 had their highest total under well dressed?"

   Ask males in the class how they rated the dress of females. Then compare the way females rated females.

   Ask females in the class how they rated the dress of males. Then compare the way males rated male dress.

   Ask people where they put themselves on the scale. Do they think the rest of the class would agree or disagree with their self-rating?

8. The discussion should turn to questions of criteria (if not, the teacher might ask the class to rate his/her own dress to focus the issue). Begin to collect adjectives and other descriptions under three headings (poorly, satisfactorily, well). Finally ask the class (on the back of their worksheet) to provide criteria for each of the grades of dress in such a way that everyone might agree on the rating.

UNIT 8 WORKSHEET H 2 MEASURING A CONCEPT EMPIRICALLY

Those concepts of interest and use to social scientists are called variables because they can be employed to measure variations or differences. For instance, "height" is a useful concept because not all people are the same height: some are tall and some are short. "Sex" varies between "male" and "female." "Church attendance" also varies: people may go every day, once a week, or once a year.

In this exercise you will take a concept--dress--and try to measure the differences (variations) among members of your class.

Below is a scale for you to rate the dress (or clothing) of every member of the class, including yourself. As each student comes to the front of the room, place a mark in the column you feel is appropriate; do not write down students' names. Separate males and females in each column.

| POORLY DRESSED | | ADEQUATELY DRESSED | | WELL DRESSED | |
|---|---|---|---|---|---|
| MALES | FEMALES | MALES | FEMALES | MALES | FEMALES |
| | | | | | |

Now count up the marks placed in each box and write the numbers in the chart below:

| | MALES | FEMALES | TOTAL |
|---|---|---|---|
| POORLY DRESSED | | | |
| ADEQUATELY DRESSED | | | |
| WELL DRESSED | | | |

Write the objective (empirical) criteria by which you differentiated poor, satisfactorily, and well-dressed people in the class below. For each category you define with criteria, write one or more clear, complete sentences.

1. The criteria of poorly dressed

2. The criteria of satisfactorily dressed

3. The criteria of well dressed

UNIT 8 WORKSHEET H 2 MEASURING A CONCEPT EMPIRICALLY

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Clarity of criteria

(4) - The criteria are stated in a few words; they can be clearly seen by anyone.

(3) - Errors in clarity occur, but the meanings are clear enough to allow correction of basic ideas presented.

(2) - Some major misunderstanding exists concerning empirical criteria and must be corrected in order to allow for further work.

(1) - The response is inadequate to a degree which calls for tutorial intervention to instruct student in the nature of evidence, concept, etc..

   b. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 8 WORKSHEET H 2 MEASURING A CONCEPT EMPIRICALLY

| WORKSHEET QUESTIONS/ PROCEDURES | Purposiveness | Self-Directedness | | SCORE | | |
|---|---|---|---|---|---|---|
| | Clarity | Suitability | | AP | PP | % |
| Criteria for Dress | | | | | | |
| 1. Poorly Dressed (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |
| 2. Satisfactorily Dressed (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |
| 3. Well Dressed (a) | | | | | | |
| (b) | | | | | | |
| (c) | | | | | | |
| (d) | | | | | | |
| (e) | | | | | | |
| (f) | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

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AP - Actual Points

PP - Possible Points

UNIT 8 Worksheet H 3 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Concepts

Generic skill objectives:

1, Defining a concept nominally and operationally.

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Procedural skill objectives:

1. Writing a general definition of a concept.
2. Writing a definition of a concept which implies, specifically, how the concept is to be measured.

Prerequisite procedural skills:

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Concepts developed:

nominal definition
operational definition

Prerequisite concepts:

objectivity
subjectivity
concept

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Readings and/or required supplemental materials: Labovitz and Hagedorn,

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General description of unit activity (i.e., what the student does):

Student completes Worksheet H 3 for homework. This is reviewed in class, with emphasis placed on operationally defining concepts in an empirically observable objective way.

Teacher responsibilities and suggestions for instructor:

In giving out the worksheet for homework, the teacher should briefly introduce the ideas involved: that concepts are the basis of social science theory, and that concepts can be defined both nominally and operationally.

The list of concepts from other fields can be used as a jumping-off point; students should try, first, to define some of these orally with the teacher pointing out subjective judgements.

The given definition of concept should be related to the listed concepts, but the teacher should stress that the social sciences are extremely creative in their creation of new concepts for study.

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Work to be handed in/evaluated:

Worksheet H 3

Worksheet H 3 will be scored according to PURPOSIVENESS (clarity) and SELF-DIRECTEDNESS (economy and suitability).

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 20 - 25 minutes (explanation of H 3 activity).

TIME FOR STUDENT COMPLETION OF WORK: Homework.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 25 - 35 minutes (review of H 3).

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How does this unit relate to previous and future work:

PREVIOUS: Continues development of "concept" begun in worksheets H 1 and H 2, leading the student to a clearer conception of what concepts are and what social scientists do with them.

FUTURE: Leads to exercises in the development of behavioral indicators for concepts, and, eventually, to the students' developing his own concepts and a research plan involving them.

UNIT 8 WORKSHEET H 3 CONCEPTS AND DEFINITION

In any field of study, some of the most important things to be learned are the concepts of the field. Undoubtedly, you are already familiar with many concepts from the subjects you have already studied; a few are listed below:

MATHEMATICS: equality, identity, addition, sign

PHYSICS: energy, work, mass, charge, force

LITERATURE: symbolism, metaphor, romanticism, realism, meter

ART: impressionism, line, shape, background, color

PSYCHOLOGY: drive, motivation, reward, anxiety, unconscious

LANGUAGE: noun, verb, sentence, phrase, connotation

BIOLOGY: mammal, dead, reproduction, circulation, metabolism

In all of these fields of study it is crucial, in learning the concepts, to acquire their definitions, meanings, applications, and interrelationships. Often, it seems that most of what you do when you study a new field is learn to use the concepts of that field.

For the social sciences, we can define a concept as:

A TERM OR SYMBOL THAT REPRESENTS THE SIMILARITIES IN OTHERWISE DIVERSE PHENOMENA.

For instance (to use an example from biology), people, rats, elephants, and whales, although very different from each other, are all classified together under the concept "mammal" because of their similarities: they all have hair, bring forth their young alive (instead of laying eggs), nurse their young, are warm-blooded, etc..

The concepts that social scientists use are sometimes more difficult to define, often because the words used to represent the concepts are common words with vague, everyday meanings. To avoid problems, social scientists rely on two very specific kinds of definition:

NOMINAL DEFINITION: a statement, in words, which tells people exactly what a term will refer to in the research; for example, a scientist could nominally define "wealth" as the salary income a person receives each year (disregarding the other factors--property, stock dividends, inheritance, etc.,--that enter into the "everyday" definition of the term.

OPERATIONAL DEFINITION: specifying the observable procedures--the operations--which a researcher must employ to identify or measure the concept; for example, a scientist might operationally define "social class" as the response chosen on a survey (of "lower," "middle," and "upper") by those people who fill out the survey.

A. Nominally define the following concepts so that their meanings would be clear and unambiguous in a social science study. Your answers should consist of a sentence or two that clearly restricts the meaning of the term.

1. Full-time Student

   NOMINAL DEFINITION: a student whose main interest and attention is devoted to his studies, and who, if he or she works, works in order to support his or her studies.

2. College

   NOMINAL DEFINITION: an institution of higher education that students who have completed high school attend.

(NOTE: you may not always agree with someone else's nominal definition of a term, but--if it is a good nominal definition--you should understand from it exactly what the person refers to when he uses the term.)

3. Senior Citizen

   NOMINAL DEFINITION:

4. Mature Person

   NOMINAL DEFINITION:

5. Prejudiced Person

   NOMINAL DEFINITION:

6. Population Density

   NOMINAL DEFINITION:

7. Leisure Time Activities

   NOMINAL DEFINITION:

B. Nominal definitions help to clarify and narrow the meaning of a concept, but often do not pin the concept down sufficiently so that it may be measured objectively by different researchers. Two researchers may agree on what "maturity" means (nominally), but may still disagree about whether or not a particular person is mature or not. To further enhance understanding, social scientists usually go on to define concepts operationally by telling what signs can be looked for or what procedures may be applied in order to identify or measure the concept. Give an operational definition of each of the following:

1. Full-time College Student

   OPERATIONAL DEFINITION: a student registered for 12 or more credit hours.

2. Senior Citizen

   OPERATIONAL DEFINITION: a person who has already celebrated his or her 65th birthday.

3. Population Density

   OPERATIONAL DEFINITION: the number of people in a place divided by the amount of land (e.g., 4 people per square mile).

4. Mature Person

   OPERATIONAL DEFINITION:

5. University

   OPERATIONAL DEFINITION:

6. Leisure Time Activities

   OPERATIONAL DEFINITION:

7. White Collar Worker

   OPERATIONAL DEFINITION:

8. Religious Person

   OPERATIONAL DEFINITION:

B. Operational Definitions (Cont'd.)

9. Industrialized Area

OPERATIONAL DEFINITION:

10. Social Class

OPERATIONAL DEFINITION:

ANSWERS: Unit 8, Worksheet H 3

A.3. A person who is mature and old, one who no longer works or is involved in raising a family.

A.4. A person who can control their own emotions, make decisions wisely and plan for the future.

A.5. A person who has judged things, particularly people, in advance and formed opinions and conclusions before looking at the evidence (pre + judged).

A.6. The ratio between the number of people in an area and the size of the area; how crowded a place is.

A.7. Activities carried on during a person's leisure time, usually activities they enjoy. Leisure time is defined nominally as time when they are not working. Work is defined as activity which must be done (either for pay or because it is part of the responsibilities a person has accepted). A list of activities (skiing, dancing, TV watching, etc.) is not an adequate answer.
(Discussion of this question and its answer can be used to show how the definition of one concept often depends on other definitions.)

B.4. A person over 12 (full price at the movies), over 18 (voting age), 21 (legal majority), 25 (adult automobile insurance rates), etc.. Unclear operational definitions of maturity are of great concern to and cause great problems for adolescents.

B.5. A higher educational institute which awards Masters and Doctoral Degrees.

B.6. Activities for which one is not paid, or activities carried on after one comes home from work, or activities listed by a person when he is asked, "Name your leisure time activities."

B.7. Person who wears suits (i.e., non-industrial dress) to work, or person who does work which does not rely primarily on physical (as opposed to mental) labor.

B.8. Person who participates in religious services regularly; person who reads religious books and prays regularly.

B.9. Place with a specified amount of industry, pollution, population density, etc.. (This concept is used in many varied ways--definitions will vary accordingly).

B.10. Almost any answer that directs attention to empirical (observable, measurable) phenomena: dress, income, housing, books and magazines read, etc.. Note to students that "socio-economic status" is the currently fashionable concept, and point out some of the ways it is measured, e.g., "What books and magazines do you read regularly?" "What make of automobile do you own?" (dated), etc..

UNIT 8 WORKSHEET H 3 CONCEPTS AND DEFINITIONS

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness (1 - 3)

   a. Clarity of concept, definition, statement

   (4) - The nominal and operational definitions are clearly stated and sufficient in explanatory power.

   (3) - Errors in clarity and thoroughness of definitions occur, but the meanings are clear enough to allow correction of basic ideas presented.

   (2) - Some major definitional element must be added in order to allow for further work.

   (1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of definitions).

2. Self-directedness

   a. Economy

   (4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

   (3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

   (2) - The response must be limited both in length and kind in order to make further work possible.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

   b. Suitability (to purpose)

   (4) - The selection of response is appropriate for the nature of the question.

   (3) - The selection of response is not exactly suited to the nature of the question but it demonstrates an attempt to logically respond.

   (2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 8 WORKSHEET H 3 CONCEPTS AND DEFINITIONS

| WORKSHEET QUESTIONS/ PROCEDURES | PURPOSIVENESS | SELF-DIRECTEDNESS | |
|---|---|---|---|
| | Clarity | Economy | Suitability |
| A 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| B 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT TITLE: Observing Behavior: specifying behavioral indicators

Generic skill objectives:

To understand the importance of empirical behavioral evidence in social science.

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Procedural skill objectives:

To be able to understand what is a behavior which can be observed, and what is not.

To be able to describe accurately a behavior, both "all or nothing" and scaled behaviors.

Prerequisite procedural skills:

Knowing what a concept is and how (generally) concepts are related to the empirical world.

---

Concepts developed:

subjective (subjectivity)
behavior
observation
scales
quantification (to quantify)

Prerequisite concepts:

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Readings and/or required supplemental materials:

Supplemental: Mary Lynn Collins' article.
Labovitz and Hagedorn, Introduction to Social Research (Chapter 5).
Mck. Agnew and Pyke, The Science Game: An Introduction to Research in the Behavioral Sciences, second edition (Chapter 3).

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General description of unit activity (i.e., what the student does):

Teacher introduces concepts; students complete worksheets; worksheets are discussed by teacher who attempts to synthesize the students' responses (especially on questions B and C) into single model answers.

Teacher responsibilities and suggestions for instructor:

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Work to be handed in/evaluated:

Worksheet I - 1

It will be scored according to the criteria of PURPOSIVENESS and SELF-DIRECTEDNESS.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Before writing interval, 10 minutes.

TIME FOR STUDENT COMPLETION OF WORK: In-class writing interval, 20 minutes.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 20 minutes.

---

How does this unit relate to previous and future work:

PREVIOUS: This worksheet, the first in Unit 9, gives the student exercise in specifying behavioral indicators of concepts which can guide behavioral observation. The development of several indicators for one concept along a continuum is introduced. This intensifies the notion of empirical measurement which was introduced in Unit 5.

FUTURE: The ability to state behavioral indicators for a concept will prepare the student for his own behavioral observation in the independent research project, as well as making him familiar with the notion of indicators that would demonstrate concepts capable of being measured by other research methods.

UNIT 9 WORKSHEET I-1 OBSERVING BEHAVIOR

One of the most important sources of evidence for the social scientist is the direct observation of human behavior. Behavior, in this sense, refers to anything a researcher can observe, whether sights, sounds, smells, etc.. One of the difficulties in behavioral observation is the everyday tendency to jump to conclusions, to see the motive or reasons behind an action or expression immediately. For example, we naturally conclude that a person who blushes is embarrassed, or that a student who raises his hand in class wants the instructor to call on him. The scientist tries to carefully separate behaviors, which can be observed, from internal states (such as embarrassment or anxiety) which must be inferred from these behaviors. The first step in conducting behavioral observation is to delineate clearly the concepts you want to study and the behaviors which indicate those concepts.

A. Below is a mixed list containing both concepts (internal states of mind, moods, etc.) and observable behaviors. Circle the observable behaviors.

(1) Talking in class to the person sitting next to you.

(2) Trying to clarify what the teacher said.

(3) Frowning

(4) Shaking your head in disagreement with what the teacher said.

(5) Scratching your head with a pencil.

(6) Putting on your coat.

(7) Closing your eyes.

(8) Wishing the class were over.

(9) Being puzzled about what the teacher is saying.

(10) Asking the teacher a question.

(11) Looking bored.

(12) Having an angry expression on your face.

B. One good test for making sure something is an observable behavior is the following: imagine a panel of 10 judges who are looking for the behavior. They watch 100 people and each judge checks off which of the 100 are engaging in the behavior and which are not. If it is truly an observable behavior, the 10 judges ought to agree as to which people were engaging in it and which were not.

Often, what is necessary is some fuller description of the behavior, some clearly stated criteria by which the judge (i.e., the observer) can decide whether or not the behavior has occurred. Specify three of those behaviors which are subjective in the question above and rewrite the behaviors in terms that would make it easy for the ten judges to decide whether or not the behavior had occurred. (For example, if "frowning" was a behavior you circled, you might specify "wrinkling of the forehead, eyebrows bunched together and foreward, corners of mouth turned down." Try, in each case, to imagine what you would see or hear.)

(1) Behavior _____ Specification/description

(2) Behavior _____ Specification/description

(3) Behavior _____ Specification/description

C. Some of the behaviors in which social scientists are interested are "all or nothing" types: either a person is asleep or awake; either a student speaks during class or he keeps silent; either a consumer buys a product or he doesn't. Other behaviors, however, can occur in degrees: being happy or being angry are opposites, but there are many states in between. In observing behaviors like these, the social scientist tries to quantify--to assign numbers--to each degree of behavior; this allows him, for example, to distinguish among the person who is very angry, the person who is simply annoyed, and the person who is unconcerned. To do this, he must describe each degree on the scale--what would be observed for each number.

An educator, Dr. Mary Lynn Collins, in an article titled "The Role of Enthusiasm in Quality Teaching," tried to devise scales on which particular behaviors of teachers could be used to measure how "enthusiastic" they were. Two of her scales deal with body movements and gestures:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | low | | medium | | high |
| GESTURES | Seldom moved arms out or outstretched toward person or object. Never used sweeping movements, kept arms at side or folded across body, appeared rigid. | | Often pointed with hand, using total arm. Occasionally used sweeping motion using body, head, arms, hands, and face. Steady pace of gesturing is maintained. | | Quick and demonstrative movements of body, head, arms, hands, and face, i.e., sweeping motions, clapping hands, head nodding rapidly. |
| BODY MOVEMENTS | Seldom moved from one spot or movement mainly from a sitting position to a standing position | | Moved freely, slowly and steadily. | | Large body movements, swung around, walked rapidly, changed pace, unpredictable, energetic. |

Although Collins describes in detail only three points on each scale (the extremes and the middle), it is easy to visualize teachers acting the way she describes them. If a group of 10 judges had to score a teacher's gestures and body movements using her scale, there would probably be much agreement concerning what they saw.

Now try to do the same thing yourself. For each area of behavior below, describe what you would look for as an indication of low, medium, or high enthusiasm. Some have already been filled in to help you along.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | low | | medium | | high |
| Vocal Delivery | (1) | | (2) | | Great and sudden changes from rapid, excited speech to a whisper. Varied lilting, uplifting intonation. Many changes in pitch, tone. |
| Eyes | (3) | | Appeared interested. Some changes to eyes, lighting up, shining, opening wide. | (4) | |
| Facial Expression | Appeared dead-pan, doesn't denote feeling or frowned most of the time. Little smiling or a one-second lips upturned. Lips closed. | | (5) | (6) | |

## APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

## OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness (all of C)

   a. Clarity of concept, definition, statement

   (4) - The behavioral indicators is clearly stated; it can be seen by anyone. The operational definitions are clearly stated and sufficient in explanatory power.

   (3) - Errors in clarity and thoroughness of concept, definition, and statement occur, but the meanings are clear enough to allow correction of basic ideas presented.

   (2) - Some major conceptual or definitional element must be added in order to allow for further work.

   (1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of questions, concepts, etc.).

   b. Coherence in rationale

   (4) - The operational definition is logically related to the other two indicators in the continuum.

   (3) - The operational definition is coherent but not related to the other two indicators in the continuum.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness (suitability only A and B, all of C)

   a. Economy

   (4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satsify the purpose.

   (3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

a. Economy (Cont'd.)

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and jugement.

UNIT 9 I-1 OBSERVING BEHAVIOR SPECIFYING BEHAVIORAL INDICATORS

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP | % |
| A. (1) | NA | NA | NA | NA | | | | |
| (2) | NA | NA | NA | NA | | | | |
| (3) | NA | NA | NA | NA | | | | |
| (4) | NA | NA | NA | NA | | | | |
| (5) | NA | NA | NA | NA | | | | |
| (6) | NA | NA | NA | NA | | | | |
| (7) | NA | NA | NA | NA | | | | |
| (8) | NA | NA | NA | NA | | | | |
| (9) | NA | NA | NA | NA | | | | |
| (10) | NA | NA | NA | NA | | | | |
| (11) | NA | NA | NA | NA | | | | |
| (12) | NA | NA | NA | NA | | | | |
| B. (1) | NA | NA | NA | NA | | | | |
| (2) | NA | NA | NA | NA | | | | |
| (3) | NA | NA | NA | NA | | | | |
| C. (1) | | | | | | | | |
| (2) | | | | | | | | |
| (3) | | | | | | | | |
| (4) | | | | | | | | |
| (5) | | | | | | | | |
| (6) | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT TITLE: Behavioral Observation

Generic skill objectives:

To introduce the factors which insure reliable observation.

---

Procedural skill objectives:

To understand that behaviors must be logical indicators of concepts.
To appreciate the need for selectivity in designing observations.
To understand how objectivity is attained in observation.
To appreciate need for recording system.

Prerequisite procedural skills:

---

Concepts developed:

indicators
selectivity
objectivity
non-participant observer
recording system

Prerequisite concepts:

---

Readings and/or required supplemental materials:

See I-1

---

General description of unit activity (i.e., what the student does):

Student completes worksheet at home; discusses results and implications in class.

Teacher responsibilities and suggestions for instructor:

Briefly discuss major points (indicators, selectivity, objectivity, recording systems) before handing out worksheet. A discussion of the previous worksheet (on observing behavior in classroom settings) might serve as a good bridge to this exercise; design faults in a hypothetical classroom observation should lead directly to the points in this exercise.

---

Work to be handed in/evaluated:

Worksheet I-2 It will be scored according to the criteria of SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 10-15 minutes (explain worksheet in advance).

TIME FOR STUDENT COMPLETION OF WORK:

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 75-90 minutes (for discussion and review).

---

How does this unit relate to previous and future work:

PREVIOUS: Worksheet I-1 develops the idea of behaviors as empirical evidence. This unit builds on that, showing how behavior is observed methodologically.

FUTURE: Several of the ideas here are carried forward in the unit on surveys. This exercise also forms the basis for the student's later development of a behavioral observation instrument of his own.

Effective observation does not happen accidentally. Social scientists who use observation as a source of evidence realize that there are several factors which must be present if observations are to be valid, accurate, and useful in research.

1. The behaviors must serve as indicators of the concepts which are under study. For example, "drumming fingers on the table" could serve as an indicator of "nervousness," and "blowing your nose" might serve as an indicator of "health." But "coughing" as an indicator would present problems, since it could indicate either "nervousness" or "health" (or the lack of it). It is important, in selecting indicators, that they be logically related to the concept under study.

   Match each behavior with the concept for which it might serve as an indicator (some behaviors can be used as indicators for more than one concept):

| Behaviors | Indicators for Concept: | Concepts |
|---|---|---|
| A. Number of times person has attended church in the last month. | A. _____ | 1. health |
| B. Number of stage plays person has seen in last year. | B. _____ | 2. wealth |
| C. How much time each day the person spends talking with friends. | C. _____ | 3. intelligence |
| D. How many books the person reads each year. | D. _____ | 4. friendliness |
| E. How many books the person buys each year. | E. _____ | 5. religiousness |
| F. How many times has this person been to see a doctor in the last year. | F. _____ | |
| G. How many days did this person spend in a hospital in the last year. | G. _____ | |
| H. How many times did this person lose his/her complete control of his/her temper in the last month. | H. _____ | |

(NOTE: most of these "behaviors" would be difficult to observe; it is more likely that a social scientist would collect evidence concerning them by asking questions--on a survey--than by actually observing behavior directly.)

2. Formal scientific observation must be <u>selective</u>. Social scientists realize that he cannot accurately observe everything that is going on in a particular situation; for their results to be accurate, they know that they must select only a few indicators for observation.

   Imagine that you are a social scientist at a football or baseball game. Your job is to identify the best players. (A non-scientist might simply watch the game and form a vague impression of which players were best, but, as a scientist, you want to do this in a methodical way, to make observations carefully so that your results can be compared with those of other scientists.) List six (6) indicators for the concept "good player" which you could watch during the game:

A. (1) _____

   (2) _____

   (3) _____

   (4) _____

   (5) _____

   (6) _____

Remember now that you must observe all the players on both teams.

B. Which indicator would be easiest to observe: _____ Why?

C. Which indicator would be most difficult to observe: _____ Why?

D. How many of the indicators you have listed do you think you could accurately watch for during the game? _____. List their letters: _____.

3. A third factor which affects the reliability of observation is <u>objectivity</u>. Objectivity has two meanings in observation: first, it means that the criteria you use in conducting the observation should be clear, not personal. Each indicator must be clear enough so that another person (one who does not know your thought processes) could apply the criteria and make the observation.

A. Look at the six indicators you listed in question 2 (above). Which three are the <u>least</u> <u>objective</u> (or most subjective)? _____
   (list letters)

B. For each of these three indicators, describe criteria that others might use in order to make the observation more objective:
(1)

(2)

(3)

A second meaning of objectivity in observation concerns the role of the observer. To ensure objectivity, most social scientists insist upon being non-participant observers, that is, they do not become involved in the activity they are observing. It is extrememly difficult to remain objective (and to make objective observations) if one is involved directly. "Objective means, ultimately, to "look at an activity as an object," while "subjective" means to "be one of the subjects involved in the activity."

C. What difficulties would arise if you were one of the players in the game you were observing? List five (5) ways in which this might limit your objectivity?

(1)

(2)

(3)

(4)

(5)

4. Finally, if an observation is to be accurate, it must be recorded. Memory is not very dependable in producing convincing evidence; social scientists always write down the results of their observations. (They may, of course, make tape recordings or films of the activities they observe, but these serve only as ways of looking at or listening to the activity again; in the end, they must analyze the activity according to their criteria--the indicators for the concept they are studying--and write down the results.)

Most social scientists plan, in advance, the system they will use to record observations. For example, if a social scientist were observing a college class, watching for evidence which would indicate "interested" students, he might design the following chart:

| | Number of Questions Asked | Number of Questions Answered |
|---|---|---|
| STUDENT 1 | | |
| STUDENT 2 | | |
| STUDENT 3 | | |
| STUDENT 4 | | |
| ... | | |

This would produce a tally of all the questions asked and answered during the class by each student. As each event occured, the observer would make a mark in the appropriate place.

Another method would record not only the questions asked and answered, but the part of the class in which this occurred. This might be accomplished by making 30 second observations every five minutes during the class:

| | | beginning to 0:30 | 5:00 to 5:30 | 10:00 to 10:30 | 15:00 to 15:30 | etc. |
|---|---|---|---|---|---|---|
| Student 1 | Ask | | | | | |
| | Ans | | | | | |
| Student 2 | Ask | | | | | |
| | Ans | | | | | |
| Student 3 | Ask | | | | | |
| | Ans | | | | | |

(Note: 5:00 here refers to 5 minutes and zero seconds after class begins; 15:30 refers to fifteen minutes and 30 seconds after class begins).

A. Design an observation recording system (a chart) which could be used to record the observations you make at the baseball or football game. Design your chart to record some or all of the indicators you listed in the answer to questions 2D above.

2. Self-directedness (1-4)

a. Economy (2A, 3B, 4)

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satsify the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality (3B, C; 4)

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose) (1-4)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and jugement.

UNIT 9 WORKSHEET I-2 BEHAVIORAL OBSERVATION

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|---|---|
| | | Originality | Economy | Suitability | | | | |
| 1 A | | NA | NA | | | | | |
| B | | NA | NA | | | | | |
| C | | NA | NA | | | | | |
| D | | NA | NA | | | | | |
| E | | NA | NA | | | | | |
| F | | NA | NA | | | | | |
| G | | NA | NA | | | | | |
| H | | NA | NA | | | | | |
| 2 A(1) | | NA | | | | | | |
| (2) | | NA | | | | | | |
| (3) | | NA | | | | | | |
| (4) | | NA | | | | | | |
| (5) | | NA | | | | | | |
| (6) | | NA | | | | | | |
| B | | NA | NA | | | | | |
| C | | NA | NA | | | | | |
| D | | NA | NA | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 9 WORKSHEET I-2 BEHAVIORAL OBSERVATION

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | | | SCORE AP | PP | % |
|---|---|---|---|---|---|---|---|---|
| | | Originality | | Economy | Suitability | | | |
| 3 A(1) | | NA | | NA | | | | |
| (2) | | NA | | NA | | | | |
| (3) | | NA | | NA | | | | |
| B(1) | | | | | | | | |
| (2) | | | | | | | | |
| (3) | | | | | | | | |
| C(1) | | | | NA | | | | |
| (2) | | | | NA | | | | |
| (3) | | | | NA | | | | |
| (4) | | | | NA | | | | |
| (5) | | | | NA | | | | |
| 4 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points



17

UNIT TITLE: Behavioral Observation: Preliminaries and Practice

Generic skill objectives:

To learn how to use a behavioral observation instrument.

---

Procedural skill objectives:

1. The student learns the use and becomes familiar with the graphic design of a behavioral observation instrument.
2. The student becomes competent at recording actual observations on the model instrument.

Prerequisite procedural skills:

---

Concepts developed:

See Worksheets I-1 and I-2

Prerequisite concepts:

---

Readings and/or required supplemental materials:

See I-1

---

General description of unit activity (i.e., what the student does):

See attached instructions to teacher.

Teacher responsibilities and suggestions for instructor:

See attached instructions to teacher.

Notice that PERFORMANCE will be used as a set of criteria for the first time in evaluating student work. That is because the student will actually be engaged in first-hand behavioral observation in these two activities. The criteria of performance (adequacy and accuracy) are used in any field research effort by the student, even if this is a simulation of actual quasi-experimental situation.

---

Work to be handed in/evaluated:

Worksheet I-3 and I-4

Worksheet I-3 will be scored according to the criteria of SELF-DIRECTEDNESS and PERFORMANCE.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 10 minutes

TIME FOR STUDENT COMPLETION OF WORK: 30 minutes

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 10 minutes, also, beginning of the next class, if necessary.

---

How does this unit relate to previous and future work:

PREVIOUS: These two worksheet activities give the student practice in using a formal observation instrument to record behavioral observations. The activities make operational the student's previous study of behavioral indicators.

FUTURE: The practice in behavioral observation, and adherence to an observational instrument, will prepare the student for his own observations and construction of instruments for his independent research project.

UNIT 9 WORKSHEET I-3 & I-4 INSTRUCTIONS TO TEACHER

In these two worksheets, students practice doing an actual behavioral observation. The purpose of the worksheets is to give students a familiarity with the mechanics of observation; to impress upon them the need for focus, careful attention, and clear criteria; and to demonstrate to them that the results of observation, if carefully done, constitute reliable evidence.

MATERIALS: In order to present the students with a subject to be observed and an opportunity to carry out the observation more than once, a film is necessary. To focus attention of actual behavior, the film should be silent or projected without sound. There are several possible sources:

(1) The instructor can make the film himself. This can be accomplished easily with a super 8 mm. camera and high-speed (low-light) film. Select a class, preferably a large one, set the camera in a front corner, focus on a small group (3 or 4) students, and shoot. The film will be most natural if someone other than the teacher runs the camera, and if the shooting is done well after the class begins (after the inescapable self-consciousness subsides). One cartridge of super 8 mm. film will run 3 minutes. total cost will be around 5 or 6 dollars.

(2) The worksheets have been designed with film (1) in mind: the concept to be observed is "student interest." With minor revision of the worksheet, films can be made in other situations (e.g., of students walking on campus, of people waiting in lines, etc.). In such cases, the teacher should take care that the action depicted in the film lends itself clearly to the worksheet activity--that a concept can be studied in the film (e.g., self-directedness, impatience, etc.).

(3) The instructor may adapt a commercially-made, short, live-action film (or segment of a film) for the assignment. The same considerations as noted in (2) above apply here.

(4) Many schools have videotaping equipment, and often have a stock of videotape already recorded for other purposes. A check with this department may reveal the presence of videotape which may be suited for this assignment.

The use of the film with the worksheets is rather simple. Worksheet I-3 is distributed first, the students are told to watch the film and rank their "general impressions" of the subjects in the chart. The instructor should then lead a discussion concerning these "impressions" and the concrete actions upon which they are based; the students can note these on the bottom of Worksheet I-3. Worksheet I-4 follows: before viewing the film again the students should be directed to select four empirical indicators of the concept under study. The second viewing of the film should be accompanied by time signals (every thirty seconds) from the teacher; the student's job is to track the subjects and evaluate the presence of the indicators during each thirty second period. Making the observation on Worksheet I-4 is difficult; it should demonstrate to students the need for concentration as well as the necessity for limiting the scope of an observation.

UNIT 9 WORKSHEET I-3 BEHAVIORAL OBSERVATION: PRELIMINARIES

For this observation you will view a short (3 minute) film of an actual class at the University of Louisville. For purposes of the observation the time, place of meeting, and actual subject of the class are umimportant; however, it might be useful to know that the class was a combination of lecture and discussion.

Watch the three students in the front row during the class, and try to decide which of the three is most interested and which of the three is least interested. After the film, check the boxes below which correspond to your impression.

A.

| | STUDENT 1 (male, wearing hat) | STUDENT 2 (female) | STUDENT 3 (female, black dress) |
|---|---|---|---|
| | MOST INTERESTED | MIDDLE | LEAST INTERESTED |
| STUDENT 1 | | | |
| STUDENT 2 | | | |
| STUDENT 3 | | | |

Next, try to specify some of actual behaviors you observed which led to your impression:

B.

| SIGNS OF INTEREST | SIGNS OF DISINTEREST |
|---|---|
| (1) | (4) |
| (2) | (5) |
| (3) | (6) |

2. Self-directedness (B)

a. Economy (B1-6)

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satsify the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality (B1-6)

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose) (NA)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and jugement.

3. Performance (A,B)

a. Adequacy of performance (B1-6)

(4) - Each planned step in the research is sufficient in its scope to fulfill the purpose of the project. The thoroughness which each step

is carried out satisfies the scope of the expected data collection.

(3) - There is not sufficiency and/or thoroughness to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

(2) - There is insufficient scope to the project steps, and/or the thoroughness of performance is wanting to the degree that it must be repeated.

(1) - The response is inadequate to the degree that tutorial intervention is called for in matters of logical planning and performance of all logical elements of plan.

b. Accuracy of performance (A1-3, B1-6)

(4) - Each planned step is carried out with accuracy in its process. Fidelity of the total plan is maintained by the accuracy of performance.

(3) - There is not complete accuracy in the way a research step is performed, and/or there is a straying in the conduct of the step from the total plan of research purposes; there is enough accuracy in process and direction of research performance to have gathered some useful information; but, the research steps should be repeated, at least in part.

(2) - There is a lack of accuracy in the process and direction of research which warrants repetition of the research step.

(1) - The response is inadequate to the degree that tutorial intervention is called for in instruction of the research methods themselves and in the idea of following a planned sequence of events.

UNIT 9 WORKSHEETS I-3 BEHAVIORAL OBSERVATION: PRELIMINARIES

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP | % |
| Worksheet I-3 | | | | | | | | |
| A (1) | NA | NA | NA | NA | | | | |
| (2) | NA | NA | NA | NA | | | | |
| (3) | NA | NA | NA | NA | | | | |
| B (1) | | | NA | | | | | |
| (2) | | | NA | | | | | |
| (3) | | | NA | | | | | |
| (4) | | | NA | | | | | |
| (5) | | | NA | | | | | |
| (6) | | | NA | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1- Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 9 WORKSHEET I-4 BEHAVIORAL OBSERVATION: PRACTICE

A. Name and briefly describe two behaviors which would indicate student interest:

1. BEHAVIOR #1 _____ _____

_____

2. BEHAVIOR #2 _____ _____

_____

Name and describe two behaviors which would be indicative of a lack of interest:

3. BEHAVIOR #3 _____ _____

_____

4. BEHAVIOR #4 _____ _____

_____

In viewing the film, check off whichever behaviors occur (and how frequently) during each thirty second period:

| | STUDENT | BEHAVIORS | 0 | :30 | 1:00 | 1:30 | 2:00 | 2:30 | 3:00 |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 (male, with hat) | 1 | | | | | | | |
| 2. | | 2 | | | | | | | |
| 3. | | 3 | | | | | | | |
| 4. | | 4 | | | | | | | |
| 5. | 2 (female) | 1 | | | | | | | |
| 6. | | 2 | | | | | | | |
| 7. | | 3 | | | | | | | |
| 8. | | 4 | | | | | | | |
| 9. | 3 (female, black dress) | 1 | | | | | | | |
| 10. | | 2 | | | | | | | |
| 11. | | 3 | | | | | | | |
| 12. | | 4 | | | | | | | |

2. Self-directedness (A1-4)

a. Economy (A1-4)

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satsify the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality (A1-4)

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose) (NA)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and jugement.

3. Performance (A,B)

a. Adequacy of performance (A1-4)

(4) - Each planned step in the research is sufficient in its scope to fulfill the purpose of the project. The thoroughness which each step

is carried out satisfies the scope of the expected data collection.

(3) - There is not sufficiency and/or thoroughness to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

(2) - There is insufficient scope to the project steps, and/or the thoroughness of performance is wanting to the degree that it must be repeated.

(1) - The response is inadequate to the degree that tutorial intervention is called for in matters of logical planning and performance of all logical elements of plan.

b. Accuracy of performance (B1-12)

(4) - Each planned step is carried out with accuracy in its process. Fidelity of the total plan is maintained by the accuracy of performance.

(3) - There is not complete accuracy in the way a research step is performed, and/or there is a straying in the conduct of the step from the total plan of research purposes; there is enough accuracy in process and direction of research performance to have gathered some useful information; but, the research steps should be repeated, at least in part.

(2) - There is a lack of accuracy in the process and direction of research which warrants repetition of the research step.

(1) - The response is inadequate to the degree that tutorial intervention is called for in instruction of the research methods themselves and in the idea of following a planned sequence of events.

UNIT 9 WORKSHEETS 1-4 BEHAVIORAL OBSERVATION: PRACTICE

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP | % |
| A1 | | | | | | | | |
| 2 | | | NA | | NA | | | |
| 3 | | | NA | | NA | | | |
| 4 | | | NA | | NA | | | |
| A1 | NA | NA | NA | NA | | | | |
| 2 | NA | NA | NA | NA | | | | |
| 3 | NA | NA | NA | NA | | | | |
| 4 | NA | NA | NA | NA | | | | |
| 5 | NA | NA | NA | NA | | | | |
| 6 | NA | NA | NA | NA | | | | |
| 7 | NA | NA | NA | NA | | | | |
| 8 | NA | NA | NA | NA | | | | |
| 9 | NA | NA | NA | NA | | | | |
| 10 | NA | NA | NA | NA | | | | |
| 11 | NA | NA | NA | NA | | | | |
| 12 | NA | NA | NA | NA | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1- Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 10 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Populations, Samples, Surveys

Generic skill objectives:

To understand and use the terms, population, sample, and survey properly.

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Procedural skill objectives:

To be able to judge whether a sample accurately represents a population.

To understand how and why surveys are constructed.

Prerequisite procedural skills:

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Concepts developed:

population
sample
survey
bias
cross-tabulation
open-ended questions
forced choice questions
rating, scale questions

Prerequisite concepts:

---

Readings and/or required supplemental materials:

Intro to Social Research, Chapters 3, 5.
The Science Game, Chapter 11.

---

General description of unit activity (i.e., what the student does):

Teacher explains and distributes each worksheet; after students complete each, it is discussed in class. (Note: Worksheet T-2 is to be completed in class as part of a demonstration concerning sampling).

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Teacher responsibilities and suggestions for instructor:

The teacher should expand upon and give practical examples of each idea introduced. It will be expecially helpful if the teacher collects examples of surveys (including those used in the college from which statistics are prepared) to show and discuss in class. Suggested times are flexible and can be adjusted according to teacher's intentions.

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Work to be handed in/evaluated:

Worksheets J-1 through J-5, evaluated on Coherence, Economy, Originality, and Suitability.

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 10 minutes (J1, J3, J4, J5)
40 minutes (J2).

TIME FOR STUDENT COMPLETION OF WORK: 40 minutes (J2); others done as homework.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 30 minutes (J1, J3, J4, J5).

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How does this unit relate to previous and future work:

PREVIOUS: Builds on concept-indicator distinction introduced in earlier units.

FUTURE: Provides basis for Unit 12 (data analysis) and for student's construction of his own survey during independent research project.

UNIT 10 WORKSHEET J-1 POPULATIONS AND SAMPLES

1. Social scientists are primarily interested in discovering regularities in behavior--in seeing whether or not there are "laws" or "principles" which can describe and explain the ways people act.

   Although the characteristics of individual people are of importance, most social scientists concentrate their attention on those things which groups of people have in common. The survey (and the interview) are methods they use to discover facts about the behavior and feelings of groups of people.

   Accurately determining the characteristics of a group of people is a difficult task. For many of the questions which are of interest to social scientists, the groups involved are large--often so large that it would be impossible to question (with either a survey or an interview) <u>every</u> person in the group.

   FOR EACH OF THE RESEARCH QUESTIONS BELOW, NAME THE GROUPS WHICH WOULD HAVE TO BE QUESTIONED IN ORDER TO GATHER EVIDENCE WHICH WOULD HELP ANSWER THE QUESTION. ESTIMATE, IF YOU CAN, THE NUMBER OF PEOPLE IN EACH GROUP.

A. QUESTION: Are women smarter than men?

   GROUPS:

B. QUESTION: Are today's teenagers more honest than teenagers were in the past?

   GROUPS:

C. QUESTION: Are Americans who go to church regularly more polite than those who don't?

   GROUPS:

D. QUESTION: Who has the highest income: doctors, lawyers, or dentists?

   GROUPS:

E. QUESTION: Do college students who sit in the front row in their classrooms pay more attention than those who sit in the back?

   ANSWER:

F. QUESTION: Does violence on television have a bad effect on children?

   ANSWER:

2. Part of the difficulty in answering questions like those listed above comes from the loose way in which the question defines the group to be studied.

   Rewrite each question so that the groups to be studied are clearly defined.

   QUESTION A:

QUESTION B:

QUESTION C:

QUESTION D:

QUESTION E:

QUESTION F:

3. Obviously, even if the question a social scientist asks clearly defines the groups to be studied, it is impossible to question every member of the group. The survey and interview are methods of estimating a group's characteristics by gathering data from a few members who represent the group.

In the language of social scientists, the groups to be studied are called populations and the actual persons questioned are known as samples of the population. For example, in order to determine how many students at this college have seen a movie in the last week, you might select 100 students for questioning. The 100 students would be your sample, and they would represent, hopefully, the actual behavior of the larger population--all of the students at this college--in whom you are interested.

IN THE TWO LISTS BELOW, MATCH EACH POPULATION WITH THE SAMPLE WHICH WOULD BEST REPRESENT IT:

| POPULATIONS | SAMPLES |
|---|---|
| A. ____ All living American women. | 1. Those attending a Chicago medical convention. |
| B. ____ All living medical doctors in the State of Illinois. | 2. Every tenth person who goes through the doors of a local hospital. |
| C. ____ Men between the ages of 30 and 50. | 3. Every one-hundreth woman listed in the local telephone directory. |
| D. ____ People in poor health. | 4. Every person between the ages of 18 and 23 sitting in section 4B of the stands in last week's football game. |
| E. ____ College students who attend football games. | |

UNIT 10 WORKSHEET J-2 INSTRUCTIONS TO TEACHER

This unit is designed to demonstrate dramatically the validity and limits of sampling. Students who are unsophisticated in probability theory usually grossly over- or under-estimate the value of sampling (and, consequently, the value of studies based on samples).

A dramatic beginning is to ask each student to "think of a number from one to four and write it down." The teacher then predicts that approximately 50% of the students will have written down the number 3 and that about 25% will have written 2. This never fails to impress students (and, incidentally, illustrates a major problem in survey construction--the strong tendency of subjects to choose the third of four alternatives in multiple choice questions). Point out, of course, that the natural probability is for each of the four numbers to occur 25% of the time.

MATERIALS NEEDED:
- --box (shoebox or small cardboard box) or large manila envelope.
- --distinct items which will fit the box or envelope (e.g., computer cards in two colors, marbles in two colors, pieces of white chalk and colored chalk).

1. Begin by announcing that there are 100 items in the box and that they represent 100 people being surveyed or interviewed. The items in the box are the population we are interested in studying.

2. Pose the problem: all the people in the population cannot be studied directly (because they are unwilling, too numerous, unreachable, etc.). The nature of the population must be determined by studying samples drawn from it.

3. Name the concept being studied (color of chalk, etc.) and give it a symbolic meaning: e.g., the white computer cards are Democrats, the green ones are Republicans; white pieces of chalk favor capital punishment, colored pieces oppose it; etc..

4. Draw a sample from the box. Without announcing your intentions, draw a heavily biased sample--for example, pick out 10 colored pieces of chalk. Have students write the results on their sheets, then have them estimate, on the basis of the sample, the number of colored pieces of chalk in the actual population. Repeat this two more times unless a student raises the bias question; if the question occurs, discuss it; if it doesn't occur, bring it up for discussion after the third sample is drawn.

5. Now draw three random samples, returning each to the box before the next sample is drawn. After each, have students estimate the population. Ask for estimates and discuss the range of class estimates.

6. Discuss the question of sample size and reliability (or the probability that the sample accurately represents the population). Increase sample sizes on the next three trials, and ask students to estimate the population again.

7. Finish with a general discussion of samples, population, representativeness, sampling methods (random, structured, quota, systematic, etc.), and discuss the social scientific assumption that underlies sampling methods; that there are regularities underlying human behavior. Contrast this to humanistic methods (in which the focus of study is of individuals rather than groups), and the humanistic assumptions (which, at base, are very similar to those of social science) that the study of one individual provides insights into all individuals.

Additional suggestions:

1. The teacher can, if he wishes, use this exercise to practice or review some elementary statistical skills: figuring percentages (e.g., if 3 objects in a sample of 5 are white, what percentage are white? What is 60% of 100--that is, how can the percentage from the sample be extended to the population).

2. Averages (means) can also be taught. After a few trials, the numbers or percentages from previous trials can be averaged for a more confident estimate of population characteristics. This can be related to a brief discussion of <u>replication</u>.

UNIT 10 WORKSHEET J-2 SAMPLES

In this exercise, you will be asked to estimate or infer from a SAMPLE the nature of a POPULATION from which the sample was drawn. 100 subjects are in the POPULATION.

| | SAMPLE SIZE | NUMBER OF WHITE OBJECTS IN SAMPLE | | ESTIMATES OF ACTUAL POPULATION | |
|---|---|---|---|---|---|
| | | | | WHITE OBJECTS | COLORED OJECTS |
| TRIAL 1 | | | | | |
| TRIAL 2 | | | | | |
| TRIAL 3 | | | | | |
| TRIAL 4 | | | | | |
| TRIAL 5 | | | | | |
| TRIAL 6 | | | | | |
| TRIAL 7 | | | | | |
| TRIAL 8 | | | | | |
| TRIAL 9 | | | | | |

UNIT 10 WORKSHEET J-3 INTERPRETING SURVEY INFORMATION

Most surveys are attempts to collect a variety of information which will allow the researcher to see if people's feelings and attitudes on a particular issue vary in some regular way. Thus, the researcher must discover two things in the survey.

A. The characteristics of the people taking the survey (i.e., their age, sex, political party, income, etc.), and

B. The opinions, beliefs, feelings, and attitudes of the people taking the survey toward some issue.

Once the researcher has collected this information, comparisons can be made using variables selected from each group.

For example, suppose a researcher surveys 100 people, asking each the following questions:

A. What sex are you? (circle one) MALE FEMALE

B. Do you believe that capital punishment is an effective deterrent against crime? (circle one) YES NO

After counting the replies, the researcher can then construct a chart in which the two variables (sex, attitude toward capital punishment) are cross-tabulated:

| | MALE | FEMALE | TOTALS |
|---|---|---|---|
| FAVORS CAPITAL PUNISHMENT | 32 | 15 | 47 |
| OPPOSES CAPITAL PUNISHMENT | 13 | 40 | 53 |
| TOTALS | 45 | 55 | 100 |

(NOTE: the results here are imaginary, and provided only as an example; in a real survey, the researcher would undoubtedly ask more questions and give respondents additional choices such as "undecided," "don't know," etc..)

The value of this kind of analysis should be clear from inspecting the chart. Obviously, there is a clear connection between the sex of the person answering the question and attitude toward capital punishment: on the average, men seem to favor it and women oppose it. If all we had to look at were the totals, we might conclude that people were about evenly split on the issue (or opposed it slightly). We can also see from the chart that more women than men were surveyed.

The following two questions represent surveys and their results. Answer the questions below.

1. In a survey on atittudes toward the candidates in an upcoming election, a researcher asks:

   (1) Which candidate (Allen, Barker, or Church) will you vote for?
   (2) What sex are you?
   (3) Which age group are you in: under 18, 18 to 21, 22 to 34, 35 to 54, 55 or older.

The following cross-tabulation charts present the results:

| | ALLEN | BARKER | CHURCH |
|---|---|---|---|
| MALES | 50 | 100 | 30 |
| FEMALES | 86 | 53 | 31 |
| TOTALS | 136 | 153 | 61 |

| | ALLEN | BARKER | CHURCH |
|---|---|---|---|
| Under 18 | 3 | 38 | 10 |
| 18 - 21 | 25 | 26 | 15 |
| 22 - 34 | 30 | 41 | 11 |
| 35 - 54 | 35 | 28 | 15 |
| over 54 | 43 | 20 | 10 |

Study the results, then answer the following questions:

A. How many people were surveyed?

B. Was there a difference in candidate preference according to the sex of the voter? If so, what kind of difference?

C. Which candidate has the greatest support:

among young people (i.e., those under 18)? _____

among old people (i.e., those over 54)? _____

among women? _____

D. If only those 18 and older can vote, which candidate seems most likely to win?

E. Does there seem to be any relationship between age of voter and candidate preferred? Discuss what evidence led you to this conclusion.

F. If Church were to withdraw from the race, how would it affect the other two candidates chances of election?

G. If Allen were to withdraw, how would it affect the other two candidate's chances?

H. One other cross-tabulation chart could have been drawn from the survey data. What would it show?

2. A researcher gives a survey to 300 college students. After analyzing the responses, he constructs the following cross-tabulation charts:

| AGE | full time | part time |
|---|---|---|
| under 17 | 30 | 16 |
| 17 | 40 | 17 |
| 18 | 35 | 16 |
| 19 | 25 | 20 |
| 20 | 40 | 20 |
| over 20 | 35 | 16 |

| Major | Male | Female |
|---|---|---|
| English | 22 | 30 |
| Pol. Sci. | 18 | 6 |
| Sociology | 12 | 31 |
| Art | 21 | 15 |
| Education | 18 | 20 |
| History | 20 | 40 |
| Other | 17 | 30 |

| | Fresh. | Soph. | Junior | Senior |
|---|---|---|---|---|
| live at home | 25 | 15 | 15 | 15 |
| dormitory | 50 | 55 | 30 | 10 |
| other | 20 | 35 | 20 | 10 |

A. On the basis of these charts, write a list of questions which must have been included in the survey:

B. The researcher could have constructed, with his information, 12 other cross-tabulation charts, each showing the interaction of two variables. Which charts could he have constructed:

interrelation of (1) _____ and _____

(2) _____ and _____

(3) _____ and _____

B. (Cont'd.)

interrelation of (4) _____ and _____

(5) _____ and _____

(6) _____ and _____

(7) _____ and _____

(8) _____ and _____

(9) _____ and _____

(10) _____ and _____

(11) _____ and _____

(12) _____ and _____

UNIT 10 WORKSHEET J-4 SAMPLING AND SAMPLE BIAS

1. Choosing a sample which accurately represents the population in which you are interested is a difficult process. If your sample is not representative of the population, then you introduce into your study what social scientists call sample bias. In each of the cases listed below, the researcher has made one or more errors in choosing a representative sample; explain, in each case, why the choice of sample would bias the evidence obtained.

   A. To find out how American women feel about the next presidential election, a political scientist interviews waitresses in restaurants in the ten largest American cities.

   B. In order to determine the causes of divorce, a sociologist mails questionnaires to all women in a certain city who receive alimony payments.

   C. In a study of the effect of inflation on food costs, and economist makes telephone calls to local dentists and asks each how much his family food bills have increased in the past three months.

   D. To discover the factors which lead to alcoholism, a psychologist mails surveys to all those convicted of drunk driving within the last year.

   E. In a survey designed to discover the qualities which make teachers effective, questionnaires are distributed to college faculty members who have taught for more than 30 years.

2. Below is a paragraph from an article describing a survey performed as part of a study on ideology. Read it and answer the questions below.

(Quotation from Jean Lipman-Blumen, "How Ideology Shapes Women's Lives" Scientific American (January, 1972), pp. 34-43.)

In the study I shall describe here, female-role ideology referred primarily to a woman's system of beliefs regarding the appropriate behavior of women with respect to men. The study, which involved an extensive survey of the life plans of married women, was conducted under the auspices of the Radcliffe Institute in Cambridge, Mass., in 1968 (before the women's liberation movement had had a major impact). A detailed questionnaire was mailed to the wives of graduate students in the Boston area. Out of the 1,868 responses a sub-sample of 1,012 wives who had attended college was selected for analysis. The questionnaire inquired into early childhood experiences, academic achievements and plans, past and present family situations, personal values and life goals.

A. Does the author indicate how many questionnaires were mailed out? If so, how many? If not, can you estimate the number from other facts provided by the author?

B. The author states that 1,868 people responded to the survey. Evidently, others to whom the questionnaire was mailed did not respond. How might this bias the sample?

C. Only 1012 of the questionnaires returned were used in the analysis. Why do you think the researcher excluded the other 856 responses from the analysis?

D. What biases might affect the answers given on those surveys which were used in the analysis.

UNIT 10 WORKSHEET J-5 SURVEYS, INTERVIEWS, AND QUESTIONS

The form in which a question is asked determines its possible answers.

The English language permits us to form two types of questions. The YES/NO question seeks "yes" or "no" as the answer.

Did you eat yet?
Is she married?
Were you there?
Are you sleepy?
Are cows carniverous?
Can he sing?

YES/NO questions begin with one of the following words: DO, DID, DOES, IS, ARE, WAS, WERE, AM, CAN, WILL, SHALL, MAY, COULD, SHOULD, WOULD, MIGHT, or MUST

The other form of question in English asks for specific information and can't be answered with a simple "yes" or "no":

Where were you born?
What time is it?
Who ate my porridge?
How do you feel?

These questions, called WH-questions (because they usually begin with words having those initial letters), direct the listener to provide a certain type of information. WH-question words and the information elicited by each are as follows:

WHY -- answer is a reason, usually beginning "because.."
WHO -- answer is the name of a person (sometimes the word is WHOM)
WHAT -- answer is a noun, usually the name of an object (or, if the WHAT preceeds a noun in the question, an adjective describing the noun: WHAT day is it? Answer: payday, Tuesday, a sunny day)
WHERE -- answer names a place
HOW -- answer is an adverb or adverbial phrase, usually specifying a method, process, or means (e.g., "How did she eat dinner?" Answer: quickly, with her hands, as if she were starving, etc.)

The social scientist who wishes to use the survey or interview to gather information must rely on both types of question. He can use the two types in a variety of formats, each of which serves a slightly different purpose:

OPEN-ENDED questions do not direct or force the subject to reply in any particular form. These are almost always of the WH-type, and the choice of question word can shape the answer given:

Why did you come to college?
What is your name?
How do you prepare for examinations?

FORCED-CHOICE questions give the subject a limited number of replies to choose among. There are several sub-formats:

ALTERNATIVES: Are you married? (YES or NO)
Sex: (MALE or FEMALE)
FULL-TIME or PART-TIME student?

MULTIPLE CHOICE: Race: (white, black, Amerindian, Oriental, etc.)

Level in college: (Freshman, Sophomore, Junior, Senior)

Why did you attend <u>this</u> college?

a. low tuition rate
b. reputation
c. social activities
d. <u>other</u>

(Note that multiple-choice formats often allow the subject to respond freely by providing a choice like "other")

Occasionally, surveyers will use multiple-choice questions in which subjects can choose more than one answer:

Which of the following hobbies are you interested in (check off all those which apply):

a. bowling
b. archery
c. squash
d. photography
e. mountaineering
f. other
specify: _____

RATING or SCALE questions direct the subject to choose a point on a prepared scale for his answer:

How frequently do you attend movies?

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| OFTEN | OCCASIONALLY | SELDOM | NEVER |

Compared to other instructors you have had, how would you rate the teacher of this course?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| ONE OF THE BEST | BETTER THAN MOST | AVERAGE | WORSE THAN MOST | ONE OF THE WORST |

1. Imagine you are a social scientist interested in the television viewing habits of college students. Write two survey questions in each of the categories below which would produce evidence that might help you study this subject:

A. OPEN-ENDED QUESTIONS (1)

B. FORCED -CHOICE QUESTIONS (1)

(2)

C. RATING or SCALE QUESTIONS (1)

(2)

Part of the strategy in constructing a survey is to order the questions in some logical progression. For example, OPEN-ENDED questions usually do not prejudice the subject toward any particular answer (e.g., "What is your favorite food?") while FORCED-CHOICE questions suggest several alternatives among which the subject has to choose (e.g., "Which food is your favorite: spinach, ice cream, yogurt, gruel). Thus it is wise to ask the OPEN-ENDED question first; if they are asked in the reverse order, one of the alternatives from the FORCED-CHOICE question is likely to show up as the answer to the OPEN-ENDED one.

B. If you were to ask all of the questions you wrote above in a single survey, what order would you place them in (put 1st, 2nd, 3rd, etc., next to each question):

QUESTION A(1) _____ QUESTION B(2) _____

QUESTION A(2) _____ QUESTION C(1) _____

QUESTION B(1) _____ QUESTION C(2) _____

C. Explain briefly the reasons you have for putting the questions in this order:

E. EXAMPLE OF MEASURING GOAL-DIRECTED ACTIVITY IN ACADEMIC RESEARCH WITH THE AFOREMENTIONED MEASUREMENT PRINCIPLES:

A WORKSHEET USED FOR STATING A RESEARCHABLE QUESTION IN LRST 101: INTRODUCTION TO SOCIAL SCIENCE

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Coherence in rationale

(4) - The meaning of the answer is logically related to the purpose of the question.

(3) - The meaning of the answer is somewhat vague given the purpose of the question.

(2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

(1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

   a. Economy

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

   b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 10 WORKSHEET J-1

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP | % |
| 1 A | NA | | NA | NA | | | | |
| B | NA | | NA | NA | | | | |
| C | NA | | NA | NA | | | | |
| D | NA | | NA | NA | | | | |
| E | NA | | NA | NA | | | | |
| F | NA | | NA | NA | | | | |
| 2 A | NA | NA | NA | | | | | |
| B | NA | NA | NA | | | | | |
| C | NA | NA | NA | | | | | |
| D | NA | NA | NA | | | | | |
| E | NA | NA | NA | | | | | |
| F | NA | NA | NA | | | | | |
| 3 A | NA | NA | NA | NA | | | | |
| B | NA | NA | NA | NA | | | | |
| C | NA | NA | NA | NA | | | | |
| D | NA | NA | NA | NA | | | | |
| E | NA | NA | NA | NA | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 10 WORKSHEET J-2

| WORK-SHEET QUES. TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | |
|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP |
| All | NA | NA | NA | NA | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | | Originality | Economy | Suitability | | AP | PP | % |
| 1 A | NA | NA | | NA | NA | | | | | |
| B | NA | | | NA | NA | | | | | |
| C | NA | NA | | NA | NA | | | | | |
| D | NA | NA | | NA | NA | | | | | |
| E | NA | | | NA | NA | | | | | |
| F | NA | NA | | NA | NA | | | | | |
| G | NA | NA | | NA | NA | | | | | |
| H | NA | NA | | NA | NA | | | | | |
| 2 A | NA | | | NA | | | | | | |
| B(1) | NA | NA | | NA | NA | | | | | |
| (2) | NA | NA | | NA | NA | | | | | |
| (3) | NA | NA | | NA | NA | | | | | |
| (4) | NA | NA | | NA | NA | | | | | |
| (5) | NA | NA | | NA | NA | | | | | |
| (6) | NA | NA | | NA | NA | | | | | |
| (7) | NA | NA | | NA | NA | | | | | |
| (8) | NA | NA | | NA | NA | | | | | |
| (9) | NA | NA | | NA | NA | | | | | |
| (10) | NA | NA | | NA | NA | | | | | |
| (11) | NA | NA | | NA | NA | | | | | |
| (12) | NA | NA | | NA | NA | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points



200

UNIT 10 WORKSHEET J-4

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clarity | | Coherence | Originality | | Economy | Suitability | AP | PP | % |
| 1 A | NA | | | NA | | NA | | | | |
| B | NA | | | NA | | NA | | | | |
| C | NA | | | NA | | NA | | | | |
| D | NA | | | NA | | NA | | | | |
| E | NA | | | NA | | NA | | | | |
| 2 A | NA | | | NA | | NA | | | | |
| B | NA | | | NA | | NA | | | | |
| C | NA | | | NA | | NA | | | | |
| D | NA | | | NA | | NA | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP | % |
| 1 A(1) | NA | | | | | | | |
| (2) | NA | | | | | | | |
| 1 B(1) | NA | | | | | | | |
| (2) | NA | | | | | | | |
| 1 C(1) | NA | | | | | | | |
| (2) | NA | | | | | | | |
| B (1) | NA | NA | NA | NA | | | | |
| (2) | NA | NA | NA | NA | | | | |
| (3) | NA | NA | NA | NA | | | | |
| (4) | NA | NA | NA | NA | | | | |
| (5) | NA | NA | NA | NA | | | | |
| (6) | NA | NA | NA | NA | | | | |
| C | NA | | NA | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

AP - Actual Points

PP - Possible Points

UNIT TITLE: Other Methods of Inquiry: Additional Evidence, Settings

Generic skill objectives:

To learn how physical trace evidence, performance test evidence, and physical test evidence are used by social scientists.
To distinguish among naturalistic, quasi-experimental and experimental settings.
To understand why control of variables is important in social science.

---

Procedural skill objectives:

To identify concepts, given indicators.
To conceptualize, roughly, research designs.

Prerequisite procedural skills:

---

Concepts developed:

physical trace evidence
performance testing
physical test evidence
Galvanic Skin Response
control (of variables); controlled experiment

Prerequisite concepts:

---

Readings and/or required supplemental materials:

Intro to Social Research, Chapter 5.
The Science Game, Chapters 4 - 7.

---

General description of unit activity (i.e., what the student does):

Teacher introduces Worksheet K-1 by outlining the types of evidence covered and by defining and illustrating (for question 2) "eye-hand coordination," "risk," and "concentration." This should reinforce the notion of concept. For question 3, the teacher should explain further the concept "group involvement." After discussing the results, Worksheet K-2 should be distributed. The results to K-2 ought to be followed by a major discussion of setting (using all the methods previously introduced) and the value of studies which control the number of variables involved.

---

Teacher responsibilities and suggestions for instructor:

Use numerous examples (drawn from the teacher's own knowledge and experience) to illustrate the new methods, the differences among settings, and the concept of control.

After Worksheet K-2 has been completed and discussed, it might be useful for the instructor to lead a class discussion in the design of a study in which all the methods and concepts presented could be synthesized. A subject which has proven effective in the past is this: ask the class to design a research study to answer the question "what is funny?" This may be cast in a

situational form: you are a television executive and are charged with the production of a new comedy television show which must have wide appeal (in order to sell advertising space). How would you determine what kind of comedy would attract the most viewers?

---

Work to be handed in/evaluated:

Worksheets K-1 and K-2, evaluated in terms of Coherence, Economy, Originality, and Suitability.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 25 minutes (before K-1); 10 minutes (before K-2).

TIME FOR STUDENT COMPLETION OF WORK: homework.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 40 minutes (for K-1); 30 minutes (for K-2).

---

How does this unit relate to previous and future work:

PREVIOUS: Expands students' knowledge of useable methods; introduces considerations of setting and control to methods previously learned.

FUTURE: Prepares students for the design of their own research project.

UNIT 11 WORKSHEET K-1 OTHER METHODS OF INQUIRY AND OTHER SOURCES OF EVIDENCE

Although observation and surveys are perhaps the most used of social scientific methods for gathering evidence, they are not the only means available to collect data concerning human behavior. In addition to them, the social scientist can use:

PHYSICAL TRACE EVIDENCE: physical evidence which remains behind after an activity is completed. Since behavioral scientists are interested in studying behavior, and since behavior (if it has not been observed or if those involved in it have not been surveyed) disappears, physical trace evidence is often very useful. It can be used only when the behavior to be studied leaves behind a trace or track, for example:

--A student's notebook contains a physical trace of the student's activity (notetaking) during class.
--Paths worn in the grass on campus are physical traces of the routes taken by people walking between buildings.
--Signs of wear on desks and chairs are physical traces of seating patterns in classes.

1. Each of the following describes a piece or type of physical evidence which might serve as a record of behavior. This evidence, therefore, could be used as an indicator of some concept a social scientist wanted to study. Name a concept which could be studied using the physical evidence, and explain briefly why the physical evidence would be useful as an indicator of that concept.

   A. EVIDENCE: monthly telephone bills

      CONCEPT: sociability (or friendliness)

      EXPLANATION OF EVIDENCE'S USE AS INDICATOR OF CONCEPT:

      Sociable (or friendly) people are those who have many friends and who spend time talking with their friends. A person with a high telephone bill makes many calls, and therefore, spends much time talking with people. It is likely that a high telephone bill indicates that a person is friendly.

   B. EVIDENCE: kinds of magazines seen in a person's house

      CONCEPT:

      EXPLANATION OF EVIDENCE'S USE AS INDICATOR OF CONCEPT:

C. EVIDENCE: number of ashtrays found in a person's house

CONCEPT:

EXPLANATION OF EVIDENCE'S USE AS INDICATOR OF CONCEPT:

D. EVIDENCE: Wear (i.e., difference in size before and after class) of chalk in a teacher's class

CONCEPT:

EXPLANATION OF EVIDENCE'S USE AS INDICATOR OF CONCEPT:

Another important source of evidence comes from physical testing. Testing can be applied either to people or to physical objects:

PERFORMANCE TEST EVIDENCE: evidence which results from constructing and administering tests which evaluate a person's (or animal's) performance in a particular task. Examples are numerous: academic paper-and-pencil tests of vocabulary size, mathematical ability, knowledge of ancient Greek history, etc.. In addition, there are performance tests of non-intellectual abilities: putting a disassembled carburetor together, broad-jumping (and other athletic events), finding the best route through a maze, etc..

2. A carefully planned and administered performance test can produce extremely accurate data concerning a person's behavior and abilities. Make up and describe a performance test by which you could measure any <u>one</u> of these three concepts:

--<u>EYE-HAND COORDINATION</u> (the ability to use information acquired through the eyes to direct the actions of the hands)
--<u>WILLINGNESS TO TAKE RISKS</u>
--<u>ABILITY TO CONCENTRATE</u>

A. Name the concept you will test for: _____

B. Describe the test you have designed:

C. Explain why you believe this test will accurately measure the concept:

D. What other sources of evidence (i.e., other than performance testing) are there for this concept. Explain.

A final widely-used form of testing, more popular perhaps in the natural sciences than in the social sciences, is physical testing.

PHYSICAL TEST EVIDENCE: evidence derived from tests applied to physical objects. Measurements and tests can be made both on living and inanimate objects.

Physical tests performed on human beings include:
--measuring height
--measuring weight
--measuring blood pressure
--counting the number of times the heart beats per second
--determining the alcohol content of the blood or breath

Physical tests performed on inanimate objects include:
--radioactive carbon-14 dating (to determine the time at which organic artifacts died)
--measuring density (or specific gravity) elements
--chemical analysis (to determine which are present in some complex substance)
--spectrographic analysis (to determine from the light of a burning substance what elements are present in the substance--e.g., a distant star)

3. One physical test often used in the social sciences is the GALVANIC SKIN RESPONSE. This test is based on the fact that the electrical conductivity of human skin changes under emotional stress. In the test, electrodes are attached (usually to the arm) in two places, and a weak electrical current (which the subject cannot feel) is passed from one to the other. Changes in the strength of the current indicate changes in the emotional stress felt by the subject. (This test is one of the most important components of a lie detector.)

3. (Cont'd.) Suppose you are a social scientist who wishes to study whether or not the lack of group involvement (being part of a group or being left out of a group) produces emotional stress. Briefly describe a study (using the Galvonic Skin Response--or GSR) which would produce evidence that would enable you to answer this question.

UNIT 11 WORKSHEET K-2 NATURALISTIC AND EXPERIMENTAL SETTINGS

The methods used to collect data by social scientists can be used in a variety of settings. The setting chosen for the application of a particular method often determines the validity of the results obtained.

NATURALISTIC SETTINGS: As the word implies, these are "natural" or "everyday" situations, settings which have not been manipulated or changed by the scientist. For example, a sociologist studying eating habits could quietly observe people in a public restaurant; the people being observed would not be aware that a study was being conducted, and their behavior would be "natural."

EXPERIMENTAL SETTINGS: An experimental setting is one which would not occur naturally, one which has been arranged by the scientist doing the study. For example, an economist interested in gambling behavior could give subjects a certain number of chips and have them play roulette in a laboratory where he can watch and record their behavior.

QUASI-EXPERIMENTAL SETTINGS: There are in-between the other two: settings which occur naturally, but where some conditions have been altered by the experimenter. For example, a psychologist interested in the effect of food color on eating habits might convince a restaurant to use artificial food colorings to alter the meals they serve (e.g., green meat, red milk, blue cookies)

Each of these settings can be used with a variety of methods and has its assets and faults.

1. Control of the number of variables in a study is often useful: if a scientist wants to see whether crowded rooms make people nervous, he might want to limit or control other factors (such as tiredness, social situation, etc.) that often cause people to be nervous. What kind of setting is most useful in controlling the number of variables being studied? Why?

2. Self-consciousness often makes people change their behavior. If you know, for example, that a certain teacher has a theory that "A" students sit in the first row of seats in class, you may change your seat or choose to sit somewhere that you would not ordinarily sit. Which kind of setting is least likely to make people self-conscious? Why?

3. Make up an example of each of the following:

A. an observation conducted in a naturalistic setting:

B. a survey conducted in an experimental setting:

C. a performance-test conducted in a quasi-experimental setting.

D. an observation conducted in an experimental setting:

## E. EXAMPLE OF MEASURING GOAL-DIRECTED ACTIVITY IN ACADEMIC RESEARCH WITH THE AFOREMENTIONED MEASUREMENT PRINCIPLES:

### A WORKSHEET USED FOR STATING A RESEARCHABLE QUESTION IN LBST 101: INTRODUCTION TO SOCIAL SCIENCE

#### APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability

#### OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Coherence in rationale

   (4) - The meaning of the answer is logically related to the purpose of the question.

   (3) - The meaning of the answer is somewhat vague given the purpose of the question.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

   a. Economy

   (4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

   (3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

   (2) - The response must be limited both in length and kind in order to make further work possible.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied, in the indicators which will allow collection of evidence to support claim or answer questions, and in overall design of the study.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 11 WORKSHEET K-1

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|
| | Coherence | Originality | Economy | Suitability | AP | PP | % |
| 1 B | | NA | | | | | |
| 1 C | | NA | | | | | |
| 1 D | | NA | | | | | |
| 2 A | | NA | NA | | | | |
| 2 B | | | | | | | |
| 2 C | | | NA | | | | |
| 2 D | | | NA | | | | |
| 3 | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

AP - Actual Points

PP - Possible Points

UNIT 11 WORKSHEET K-2

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Coherence | | Originality | Economy | Suitability | AP | PP | % |
| 1 | | | NA | | | | | |
| 2 | | | NA | | | | | |
| 3 A | | | | NA | | | | |
| 3 B | | | | NA | | | | |
| 3 C | | | | NA | | | | |
| 3 D | | | | NA | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

AP - Actual Points

PP - Possible Points

UNIT 12 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Basic Descriptive Statistics

Generic skill objectives:

To learn how statistical measures are used in social science research.

---

Procedural skill objectives:

To calculate maximum, minimum, range, mode, median, and mean.

Prerequisite procedural skills:

---

Concepts developed:

Measures of central tendency
maximum
minimum
range
mode
median
mean

Prerequisite concepts:

---

Readings and/or required supplemental materials:

Intro to Social Research, Chapter 6.
The Science Game, Part 3, Chapters 8 - 11.

---

General description of unit activity (i.e., what the student does):

Teacher explains general idea of statistics, hands out Worksheet L.

After student completes Worksheet L, teacher reviews it, working through each problem.

---

Teacher responsibilities and suggestions for instructor:

Teacher should demonstrate how simple graphs (bar, line, and pie) can be used to describe a distribution.

Teacher can, if he wishes, expand unit to cover variance, standard deviation, and the "normal" distribution.

---

Work to be handed in/evaluated:

Worksheet L

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 15 minutes preparation.

TIME FOR STUDENT COMPLETION OF WORK:

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 50 minutes discussion.

How does this unit relate to previous and future work:

PREVIOUS: Shows how data collected by various methods can be analyzed.

FUTURE: Provides basis for further analytical procedures used in Unit 17.

UNIT 12 WORKSHEET 1 BASIC DESCRIPTIVE STATISTICS

Statistics refers to the collection, organization, and analysis of data--of numbers which represent characteristics of the people in whom social scientists are interested. The numbers themselves may be collected through any of the methods available to the social scientist: surveys, observations, testing, etc..

Since social scientists usually study only a sample of the population in which they are interested, it is important for them to use the data they collect carefully--to build their arguments and interpretations on the basis of the evidence they have collected. One of the first steps in this process is the simple description of the data. There are only a few important descriptive statistics:

1. MINIMUM, MAXIMUM, AND RANGE

These statistics show, at a glance, the spread of numbers the scientist has collected. Say, for example, a psychologist is interested in the question of whether people watch more television as they grow older. He interviews 9 people and asks each their age and how many hours of TV they watch each week. He might obtain the following figures:

| SUBJECT | AGE | NUMBER OF HOURS OF TV WATCHED |
|---|---|---|
| 1 | 23 | 12 |
| 2 | 15 | 25 |
| 3 | 72 | 30 |
| 4 | 9 | 18 |
| 5 | 45 | 9 |
| 6 | 35 | 10 |
| 7 | 23 | 10 |
| 8 | 38 | 22 |
| 9 | 13 | 27 |

The MAXIMUM and MINIMUM figures for each variable can be obtained simply by inspecting the numbers in each column. The RANGE is the difference between the MAXIMUM and MINIMUM, calculated by subtracting the smaller from the higher number:

| AGE | | NUMBER OF HOURS OF TV WATCHED | |
|---|---|---|---|
| Maximum: | 72 | Maximum: | 30 |
| Minimum: | 9 | Minimum: | 9 |
| Range: | 63 | Range: | 21 |

A. If subject 3 (the 72 year old) had not been a part of the sample, what would have been the Maximum, Minimum, and Range figures for age?

B. If subject 3 had not been a part of the sample, what would the Maximum, Minimum, and Range figures for Numbers of Hours of TV Watched have been?

2. MODE, MEDIAN, AND MEAN

Maximum, Minimum, and Range are somewhat "crude" statistics, since, although they give the general outlines of a sample, they do not allow one to see the nature of the figures which compose it. In the example above, these figures would have been the same if five of the people had been 72 and watched 30 hours of TV and if the other five had been 9 year olds watching 9 hours.

The MODE statistic allows one to see if a certain value occurs more than any other; for example, if most of the people in the sample were age 16, 16 would be the mode. To calculate the MODE, count the frequency of each figure that occurs: the one that occurs most frequently is the MODE. (If there is a tie for most frequently occurring figure, there is more than one MODE.

A. What is the MODE for age in the example given in question 1?

B. What is the MODE for number of hours of TV watched in question 1?

3. The MEDIAN is the numerical value of the "middle case:" half the numbers collected are larger and half are smaller. To calculate the MEDIAN, put all the numbers from one variable in order (from smallest to largest) and find the one in the middle.

A. The figures obtained for age, in order, were as follows:

9, 13, 15, 23, 23, 35, 38, 45, 72

(Note that if a number occurs twice, like 23, it is listed twice.) What is the number which is in the middle?

B. Using the data given in question 1, figure the MEDIAN number of hours of TV watched?

4. The MEAN (or AVERAGE) is the most used of these three statistics. It is calculated by adding all the figures obtained for a variable together and then dividing by the number of figures. For example, if two people are measured, and one is 5 feet tall while the other is 6 feet, the MEAN height is the sum of the two ( 5 + 6 = 11 ) divided by the number of people involved ( 11 ÷ 2 = 5½ ). Thus their MEAN or AVERAGE height is five and one-half feet.

A. Calculate the MEAN age for the sample in question 1?

(23 + 15 + 72 + 9 + 45 + 35 + 23 + 38 + 13) divided by 9 =

B. Figure out the MEAN number of hours of TV watched?

MODE, MEDIAN, and MEAN are all referred to as measures of central tendency because from them, one can estimate how well the data tends to cluster around some central number. They are extrememly useful in presenting and interpreting data.

5. A psychologist finds that a sample of 15 students obtain the following scores on a standardized intelligence test: 87, 89, 91, 91, 92, 95, 98, 98, 98, 100, 101, 102, 102, 105, 115. Figure the following statistics:

A. MINIMUM:

B. MAXIMUM:

C. RANGE:

D. MODE:

E. MEDIAN:

F. MEAN:

6. The following are the weights of people at the beginning of a diet study:

152 lbs. 163 lbs. 114 lbs. 205 lbs. 184 lbs.
284 lbs. 98 lbs. 132 lbs. 110 lbs.

Compute the following statistics:

A. MINIMUM:

B. MAXIMUM:

C. RANGE:

D. MODE:

E. MEDIAN:

F. MEAN:

WORKSHEET L ANSWER KEY AND EVALUATION

Answers:

| | | | |
|---|---|---|---|
| 1A. 45, 9, 36 | 3A. 23 | 5A. 87 | 6A. 98 |
| 1B. 27, 9, 18 | 3B. 18 | 5B. 115 | 6B. 284 |
| 2A. 23 | 4A. 30 1/3 | 5C. 18 | 6C. 186 |
| 2B. 10 | 4B. 18 1/9 | 5D. 98 | 6D. None-all are modes |
| | | 5E. 98 | 6E. 152 |
| | | 5F. 97.6 | 6F. 160.222 |

Self-Directedness: Suitability

(4)--Answer was correct and matches key above.

(3)--Answer does not match key above, but is in same general range; student evidently made a minor arithmetical error, but used proper procedure for obtaining result.

(2)--Answer is not suitable to question; student confused terms or used improper procedure to calculate answer.

(1)--Response missing or totally inappropriate to a degree which calls for tutorial intervention.

## UNIT 6 WORKSHEET F CULTURAL ANALYSIS

| WORKSHEET QUESTIONS/ PROCEDURES | | SELF-DIRECTEDNESS | | SCORE | | |
|---|---|---|---|---|---|---|
| | | Suitability | | AP | PP | % |
| 1 A | | | | | | |
| 1 B | | | | | | |
| 2 A | | | | | | |
| 2 B | | | | | | |
| 3 A | | | | | | |
| 3 B | | | | | | |
| 4 A | | | | | | |
| 4 B | | | | | | |
| 5 A | | | | | | |
| B | | | | | | |
| C | | | | | | |
| D | | | | | | |
| E | | | | | | |
| F | | | | | | |
| 6 A | | | | | | |
| B | | | | | | |
| C | | | | | | |
| D | | | | | | |
| E | | | | | | |
| F | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 13 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Formulating a Research Question

Generic skill objectives:

1. To enable the student to formulate a research question which is based upon measurable concepts, thus suggesting research methods.

2. To help the student formulate a research question which is perceived as socially significant.

---

Procedural skill objectives:

1. The student will construct a research question which contains at least two measurable concepts.
2. The student will define the concepts both nominally and operationally.
3. The student will make a cultural analysis of the question's significance.
4. The student will provide indicators by which the concepts can be recognized in human behavior.

Prerequisite procedural skills:

1. Cultural analysis.
2. Constructing behavioral indicators which demonstrate a concept in action.

---

Concepts developed:

1. researchable question

Prerequisite concepts:

1. nominal and operational definitions
2. indicators
3. cultural analysis

---

Readings and/or required supplemental materials:

Labovitz and Hagedorn, Introduction to Social Research (Chapter 2).

Worksheet M

---

General description of unit activity (i.e., what the student does):

The student completes Worksheet M for homework. Class is spent in discussing representative research questions, definitions, rationale of indicators, cultural significance of question, etc..

Half the class should be allowed for small student groups in which they share with each other their questions.

At this point, as the student is beginning his or her independent project, the instructor should distribute Independent Project Report #1 (see specific instructions accompanying the reporting sheet). It may be collected at the beginning of the next class, together with any more specific detail the instructor has requested.

Teacher responsibilities and suggestions for instructor:

The teacher should use the example sheet, and at least two students as examples for the whole class, seeking to bring some awareness of the need for a question to have social significance. However, it is important that a question be personally meaningful to the student.

The small group sharing of questions allows the future reality of doing the research project to permeate the class. Facilitate the small groups by walking around the room and answering questions; spur discussion by asking if each student is getting a chance to present their question, significance of question, concept definitions, etc..

---

Work to be handed in/evaluated:

Worksheet M

It will be scored according to the criteria of PURPOSIVENESS and SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Student peer groups, 30 minutes.

TIME FOR STUDENT COMPLETION OF WORK: Homework (Worksheet M).

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 20 minutes at beginning of class, review of Worksheet M.

---

How does this unit relate to previous and future work:

PREVIOUS: Developing the research question for future research is based on Unit 8's work on concept development and Unit 9's work on the development of indicators for concepts. Cultural analysis of a question can be reviewed in Unit 6's and Unit 7's study of cultural analysis.

FUTURE: The research question will be the basis of the independent research project that is conducted with the help of Units 14-19. The logical construction of research methods, the logical compilation and analysis of research results, will all be linked to this question.

UNIT 13 WORKSHEET M FORMULATING A RESEARCH QUESTION

1. Write your question (which contains at least two concepts that will be measured):

2. What suggested this idea to you?

3. What effect would a definitive answer to this question have on public or private education?

4. What are the concepts involved in your question?

   (a)

   (b)

   (other)

   (other)

5. Write nominal and operational definitions for each concept:

   Concept A:

   (1) Nominal:

   (2) Operational:

   Concept B:

   (1) Nominal:

   (2) Operational:

6. Provide 3 to 5 indicators for each concept, so that a researcher could recognize the concept occuring in someone's behavior.

These indicators will help you make a behavioral observation of each concept; but, they will also help you design a survey or a performance test to measure the presence of the concept.

Concept A

Indicator 1
2
3
4
5

Concept B

Indicator 1
2
3
4
5

Other

Indicator 1
2
3
4
5

Other

Indicator 1
2
3
4
5

7. Give the rationale of how and why each of your indicators for a concept can help you measure that concept. (Each statement can begin "Indicator #1 of Concept A can be used to measure Concept A because....", etc.)

SEE EXAMPLE WORKSHEET ATTACHED

UNIT 13 WORKSHEET M FORMULATING A RESEARCH QUESTION

1. Write your question (which contains at least two concepts that will be measured):

   What kinds of classroom activity occur with a liberal teacher?

2. What suggested this idea to you?

   I think that a teacher who is more open to student opinions, and who allows the student express himself or herself freely in a class, will have interesting kinds of activity for students to participate in.

3. What effect would a definitive answer to this question have on public or private education?

   The kinds of activity stimulated by liberal teachers would help other teachers expand the ways in which they run classes. A list of kinds of activity would help any teacher think of teaching methods.

4. What are the concepts involved in your question?

   (a) kinds of activity (classroom)

   (b) liberal teacher

   (other)

   (other)

5. Write nominal and operational definitions for each concept:

   Concept A: activity (classroom)

   (1) Nominal: activity - a specified form of supervised action.

   (2) Operational: classroom activity - an activity suggested by the teacher which takes place during the classroom meeting.

   Concept B: teacher (liberal)

   (1) Nominal: teacher - one who imparts knowledge of skill
   liberal - having, expressing, or following views or policies that favor the freedom of individuals to act or express themselves.

   (2) Operational: in a manner of their own choosing.

   liberal teacher - a teacher who believes in the student's right to express one's own opinions, and who allows the student maximum opportunity to show independent thought by providing stimulating classroom activities.

6. Provide 3 to 5 indicators for each concept so that a researcher could recognize the concept occurring in someone's behavior.

Those indicators will help you make a behavioral observation of each concept; but, they will also help you design a survey or a performance test to measure the presence of the concept.

Concept A: classroom activity

Indicator 1 discussion of the topic
2 in-class written assignment
3 debate between students
4 individual presentation
5 analytic reading of text materials

Concept B: liberal teacher

Indicator 1 asking for student opinion
2 instituting small group sharing between students
3 encouraging student presentations
4 encouraging peer tutoring
5 supporting independent student research

Other

Indicator 1
2
3
4
5

Other

Indicator 1
2
3
4
5

7. Give the rationale of how and why each of your indicators for a concept can help you measure that concept. (Each statement can begin, "Indicator #1 of Concept A can be used to measure Concept A because...," etc..)

Concept A Rationale:

Indicator #1 measures Concept A because discussion is a recognizable classroom activity and the amount that occurs can be timed.

Indicator #2 measures Concept A because an in-class written assignment is a recognizable classroom activity and the amount that occurs can be timed.

Indicator #3 measures Concept A because debate between students is a recognizable activity and the amount that occurs can be timed.

7. (continued)

Indicator #4 measures Concept A because an individual presentation is a recognizable activity and the amount that occurs can be timed.

Indicator #5 measures Concept A because analytic reading of text materials is a recognizable activity and the amount that occurs can be timed.

Concept B Rationale:

Indicator #1 measures Concept B because asking for student opinion is an activity that is characteristic of a liberal teacher's class and the amount of time it is permitted can be timed.

Indicator #2 measures Concept B because instituting small group sharing between students is an activity that a liberal teacher would encourage and the amount it occurs in his classes can be timed.

Indicator #3 measures Concept B because the encouragement of student opinion is a characteristic activity of a liberal teacher's class and the amount of time he encourages the student can be timed.

Indicator #4 measures Concept B because the encouraging of peer tutoring is a characteristic of the liberal teacher and the amount of time this occurs can be timed.

Indicator #5 measures Concept B because the support of independent research by the teacher is a hallmark of the liberal teacher and the amount of such support can be determined through his statements, worksheets, etc..

## APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

## OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness (all of 1, 4, 5, 6, and 7)

   a. Clarity of concept, definition, question, and statement

   (4) - The question is stated clearly. The concept is stated in no more than three words; it suggests behavioral indicators; the nominal and operational definitions are clearly stated and sufficient in explanatory power.

   (3) - Errors in clarity and thoroughness of concept, definition, statement, and question occur, but the meanings are clear enough to allow correction of basic ideas presented.

   (2) - Some major conceptual or definitional element must be added in order to allow for further work.

   (1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of questions, concepts, etc.).

   b. Coherence in rationale

   (4) - The meaning of the answer is logically related to the purpose of the question.

   (3) - The meaning of the answer is somewhat vague given the purpose of the question.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness (all of 1 - 7)

   a. The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

   (3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

   (2) - The response must be limited both in length and kind in order to make further work possible.

2. Self-directedness (Cont'd.)

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 13 WORKSHEET M FORMULATING A RESEARCH QUESTION

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | | Originality | Economy | Suitability | | AP | PP | % |
| 1 | NA | NA | | | | | | | | |
| 2 | NA | NA | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 a | | | | | | | | | | |
| b | | | | | | | | | | |
| c | | | | | | | | | | |
| (other) | | | | | | | | | | |
| (other) | | | | | | | | | | |
| 5 A(1) | | | | | | | | | | |
| A(2) | | | | | | | | | | |
| B(1) | | | | | | | | | | |
| B(2) | | | | | | | | | | |
| other(1) | | | | | | | | | | |
| other(2) | | | | | | | | | | |
| other(1) | | | | | | | | | | |
| other(2) | | | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points



21

UNIT 13 WORKSHEET M FORMULATING A RESEARCH QUESTION

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | | Originality | Economy | Suitability | AP | PP | % |
| 6 Concept A Ind. 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| Concept B Ind. 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| Other Ind. 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| Other Ind. 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points



21

UNIT 13 WORKSHEET M FORMULATING A RESEARCH QUESTION

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | | SELF-DIRECTEDNESS | | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | | Originality | Economy | Suitability | | AP | PP | % |
| 7 Concept A Exp. 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| Concept B Exp. 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| Other Exp. 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| Other Exp. 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

AP - Actual Points

PP - Possible Points

## INDEPENDENT PROJECT REPORTS INSTRUCTIONS TO TEACHER

Units 13, 14, 15, 16, and 17 lead the student through an independent research project. Each unit is accompanied by a worksheet on which students can report those steps of the project they have already completed. Since the actual ordering of steps in each project must, ultimately, be determined by the individual student's research design and question, these reports enable the teacher to remain informed concerning the student's work. Below are several suggestions for use of the reports.

(1) Ask each student to check off those research steps he has already completed. A quick survey of the sheets will allow the teacher to identify common problems and provide guidance; in addition, the teacher will be able to identify those students who are not carrying out the project at a rate which will insure its completion.

(2) Ask students to identify and date each step as follows: C (for completed), P (for in progress), N (for not applicable--used only for the steps listed under "other evidence"). This system allows the teacher to emphasize, in class discussion, those steps on which students are currently working.

(3) The instructor may, in addition to the report, require student to turn in artifacts representing some or all of the research steps (e.g., a copy of their survey instrument, a copy of their statistical analysis of the behavioral observation results, etc.).

(4) The report sheets may be returned to students with comments, advice, and inspirational remarks, or may be retained by the teacher as a cumulative record of the student's momentum. A good compromise may be to retain two sheets at all times; this would allow the teacher to gauge the student's movement during the past two units.

INDEPENDENT PROJECT REPORT #1 NAME _____

RESEARCH DESIGN

- ☐ Have you formulated a research question?
- ☐ Have you named and nominally defined the concepts involved in your research question?
- ☐ Have you operationally defined the concepts involved in your research question?
- ☐ Have you outlined a series of research procedures which will enable you to gather evidence to answer your research question?

CULTURAL ANALYSIS

- ☐ Have you considered the social significance of your question and how a definitive answer might affect or improve society?
- ☐ Have you explored the origin of your question and its personal meaning in your own life and experience?
- ☐ Have you analyzed the cultural background, setting, and forces which might influence your research design?
- ☐ Have you explored the possibility of personal biases concerning your question which might affect your research design?

BEHAVIORAL OBSERVATION

- ☐ Have you planned a behavioral observation to gather information on your research question?
- ☐ Have you planned a system for selecting a sample for your behavioral observation?
- ☐ Have you designed an instrument for recording the information gathered during your behavioral observation?
- ☐ Have you conducted your behavioral observation?
- ☐ Have you described, statistically, the results of your behavioral observation?

SURVEY

- ☐ Have you planned a survey to gather information on your research question?
- ☐ Have you constructed the survey instrument and tested it for clarity?
- ☐ Have you planned a system for selecting a sample for your survey?
- ☐ Have you administered your survey?
- ☐ Have you described, statistically, the results of your survey?

OTHER EVIDENCE

- ☐ Have you used physical-trace evidence as a source of information for your study?
- ☐ Have you used performance-testing as a source of evidence for your study?
- ☐ Have you used physical-testing as a source of information for your study?

REPORTING RESULTS

- ☐ Have you written a narrative description of your research steps?
- ☐ Have you statistically analyzed the evidence collected by the various methods used, examining relationships among the different variables?
- ☐ Have you prepared charts, graphs, or tables displaying the statistical results of your research?
- ☐ Have you written a description of your research findings?
- ☐ Have you written an analysis of the results of your research, showing how the results help to answer your research question?

UNIT 14 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: The Research Design

Generic skill objectives:

To enable the student to design a research plan that uses appropriate methods to measure the variables to be studied.

To enable the student to create an ordered plan that allows each inquiry method selected to support the next method with evidence.

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Procedural skill objectives:

1. The student will review the concepts of his question and determine the best methods in which evidence can be gathered.
2. The student will plan a sequence of methodological steps in which each step provides evidence and ideas that help with the next step.

Prerequisite procedural skills:

1. Inferring from data
2. Practice with the various inquiry methods.

---

Concepts developed:

1. research design

Prerequisite concepts:

1. evidence

---

Readings and/or required supplemental materials:

Sanford and Labovitz, Introduction to Social Research (Chapters 2 and 4).
Mck. Agnew and Pyke, The Science Game (Chapters 5, 6, 7 and 14).

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General description of unit activity (i.e., what the student does):

The student will be guided through the various steps he must respond to on the worksheet in order to create a good research plan. Use the example and other examples of your own to make clear the importance of having a good rationale for the research plan.

Use an entire period for this preliminary explanation. Readings from the social science texts will help give you additional material on the logic of a research design.

At the next class meeting, have the student share their research plans and rationales with each other in small groups. Select one or two students and go over their plans with the whole class.

Independent Project Report #2 should be distributed with Worksheet N and returned after the worksheet has been discussed and collected. Full instructions for the Independent Project Reports are contained in Unit 13.

Teacher responsibilities and suggestions for instructor:

The major emphasis of this lesson is on making each student create a sequential plan of research which has a coherent rationale behind it.

Use direct questioning of each student to get at their thinking on method selection and ordering. Use the small group sharing to allow slower students to get help from better students. Peer modelling will help.

---

Work to be handed in/evaluated:

Worksheet N: The Research Design

The worksheet will be scored according to PURPOSIVENESS and SELF-DIRECTEDNESS.

---

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: First class meeting; second class meeting

TIME FOR STUDENT COMPLETION OF WORK: Homework

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Second class meeting.

---

How does this unit relate to previous and future work:

PREVIOUS: The selection of methods to suit the question to be researched has been prepared by the previous units which modelled the methods and Unit 13 in which the research question was developed.

FUTURE: The research design will guide the conduct of inquiry over the independent research project.

UNIT 14 WORKSHEET N THE RESEARCH DESIGN

1. WHAT IS YOUR QUESTION? _____

_____

2. WHAT CONCEPTS WILL YOU BE MEASURING IN ORDER TO ANSWER YOUR QUESTION?

_____ _____ _____

3. WHAT METHODS WILL YOU USE TO GATHER EVIDENCE, I.E. MEASURE CONCEPTS, IN ORDER TO ANSWER THE QUESTION?

_____ _____

_____ _____

_____ _____

4. WHAT ARE YOUR REASONS FOR SELECTING THOSE METHODS TO GATHER EVIDENCE?

5. ORDER THE METHODS IN THE SEQUENCE YOU WILL USE THEM IN YOUR RESEARCH.

STEP # :_____

STEP # :_____

STEP # :_____

STEP # :_____

STEP # :_____

STEP # :_____

6. EXPLAIN CAREFULLY WHY YOU HAVE SELECTED THE ABOVE ORDER. (TRY TO BUILD A RESEARCH PLAN LOGICALLY SO THAT EACH STEP HELPS YOU WITH THE NEXT STEP.)

IN YOUR EXPLANATION, EXPLAIN HOW EACH METHODOLOGICAL STEP GATHERS A KIND OF EVIDENCE THAT WILL HELP THE CARRYING OUT OF THE NEXT METHODOLOGICAL STEP.

(SEE AN EXAMPLE OF SUCH AN EXPLANATION ON NEXT PAGE)

EXAMPLE

1. WHAT IS YOUR QUESTION?

   WHAT KINDS OF CLASSROOM ACTIVITY OCCUR WITH A LIBERAL TEACHER?

2. WHAT CONCEPTS WILL YOU BE MEASURING IN ORDER TO ANSWER YOUR QUESTION?

   liberal teacher  kinds of activity (among students)

3. WHAT METHODS WILL YOU USE TO GATHER EVIDENCE, I.E., MEASURE CONCEPTS, IN ORDER TO ANSWER THE QUESTION?

   behavioral observation
   survey
   cultural analysis

4. WHAT ARE YOUR REASONS FOR SELECTING THOSE METHODS TO GATHER EVIDENCE?

   behavioral observation: This will allow me to determine, according to my definition, who is a liberal teacher. It will also allow me to observe the various kinds of activity that occur in such a class.

   survey: I will survey several teachers in order to get their opinions on contemporary issues of education, politics, etc., in order to gather data which will help me determine who is a liberal teacher.

   I will survey the students in the classroom of several liberal teachers to see what kinds of activities are most commonly practiced.

   cultural analysis: I will interpret the survey data in order to establish from my understanding who a liberal teacher is. After all my evidence is in from the other methods, I will make some judgments on why certain activities occur in the classroom of a liberal teacher.

   performance testing: In addition to the survey given the teacher, I will administer a nationally normed test on liberal attitudes to each teacher to further specify who is liberal and who isn't.

5. ORDER THE METHODS IN THE SEQUENCE YOU WILL USE THEM IN YOUR RESEARCH.

STEP #1: Administer national test on liberal attitudes to a sample of 10 teachers. Select the five most liberal.

STEP #2: Survey the five most liberal teachers concerning their educational beliefs and classroom practices.

STEP #3: Survey students in each of their classrooms to gather information on usual classroom practices and the student opinion of these practices.

STEP #4: Observe the classrooms of the five teachers in order to determine if the practices reported do occur.

STEP #5: Review the list of actual classroom practices and make a cultural analysis of whether these practices correspond to liberal ideas in education.

6. EXPLAIN CAREFULLY WHY YOU HAVE SELECTED THE ABOVE ORDER...EXPLAIN HOW EACH METHODOLOGICAL STEP GATHERS A KIND OF EVIDENCE THAT WILL HELP THE CARRYING OUT OF THE NEXT METHODOLOGICAL STEP.

I selected the performance test as the first step because it was a way to avoid any personal bias on my part in the determination of the sample of teachers I would use.

The survey given to five liberal teachers is next because I want more detailed attitudes from them on education and I will ask them specifically what practices they value in classrooms. This evidence will help me be aware of what kinds of participation to expect.

The survey given the students in these classrooms will help me see how they perceive the classroom activities in which they participate. Also, their list of activities will help prepare me for what to expect in the classroom observation. Between the answers of the teacher and the answers of the students, I can make an observation instrument of kinds of participation before going into class to observe.

The cultural analysis of the teacher's survey will help me determine if the kinds of participation he encourages is in the liberal spirit. The cultural analysis of the list of activities which actually do occur in classes, coupled with the students' perceptions of these activities, will allow me to make some statements about the classroom practices of liberal teachers.

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

Purposiveness: clarity, coherence; Self-directedness: economy, originality, and suitability

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Purposiveness (all of 4 and 6)

a. Clarity of concept; definition, statement

(4) The explanation is stated clearly. The thoughts are complete in each sentence.

(3) Errors in clarity and thoroughness of statement occur, but the meanings are clear enough to allow correction of basic ideas presented.

(2) Some major conceptual or definitional element must be added in order to allow for further work.

(1) The response is inadequate to a degree which calls for tutorial intervention and drill...(in the purpose and use of the various inquiry methods; the meaning of evidence, etc.).

b. Coherence in rationale

(4) The meaning of the answer is logically related to the purpose of the question. The reasons for selection of methods, and/or the explanations of the logical sequence of steps are well done.

(3) The meaning of the answer is somewhat vague given the purpose of the question. The reasons for selection of methods, and/or the explanations of the logical sequence of steps can be improved.

(2) The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

(1) The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness (all of 4 and 6)

a. Economy

(4) The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) The selection of response may be redundant, wordy, and incomplete, but it does point toward a satisfactory fulfillment of the purpose.

(2) The response must be limited both in length and kind in order to make further work possible.

2. (Cont'd.)

(1) The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) The selection of response shows originality in the statement of reasons given for selection, and/or ordering of research steps and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) The selection of response reflects previous model answers given to class but is adequate in light of question being asked.

(2) The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) The selection of response is appropriate for the nature of the question.

(3) The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

UNIT 14 WORKSHEET N THE RESEARCH DESIGN

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | | KEY |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP | % | 4 - Good |
| 1. | See student question from Unit 12 | | | | | | | | 3 - Satisfactory |
| 2. | See student concepts from Unit 12 | | | | | | | | 2 - Improvement Needed |
| 4. | (Score each method/reason according to all the criterion) | | | | | | | | 1 - Inadequate |
| 6. | (Score each method/explanation according to all the criterion) | | | | | | | | NA - Not Applicable Here |
| | | | | | | | | | AP - Actual Points |
| | | | | | | | | | PP - Possible Points |

INDEPENDENT PROJECT REPORT #2

NAME _____

## RESEARCH DESIGN

- ☐ Have you formulated a research question?
- ☐ Have you named and nominally defined the concepts involved in your research question?
- ☐ Have you operationally defined the concepts involved in your research question?
- ☐ Have you outlined a series of research procedures which will enable you to gather evidence to answer your research question?

## CULTURAL ANALYSIS

- ☐ Have you considered the social significance of your question and how a definitive answer might affect or improve society?
- ☐ Have you explored the origin of your question and its personal meaning in your own life and experience?
- ☐ Have you analyzed the cultural background, setting, and forces which might influence your research design?
- ☐ Have you explored the possibility of personal biases concerning your question which might affect your research design?

## BEHAVIORAL OBSERVATION

- ☐ Have you planned a behavioral observation to gather information on your research question?
- ☐ Have you planned a system for selecting a sample for your behavioral observation?
- ☐ Have you designed an instrument for recording the information gathered during your behavioral observation?
- ☐ Have you conducted your behavioral observation?
- ☐ Have you described, statistically, the results of your behavioral observation?

## SURVEY

- ☐ Have you planned a survey to gather information on your research question?
- ☐ Have you constructed the survey instrument and tested it for clarity?
- ☐ Have you planned a system for selecting a sample for your survey?
- ☐ Have you administered your survey?
- ☐ Have you described, statistically, the results of your survey?

## OTHER EVIDENCE

- ☐ Have you used physical-trace evidence as a source of information for your study?
- ☐ Have you used performance-testing as a source of evidence for your study?
- ☐ Have you used physical-testing as a source of information for your study?

## REPORTING RESULTS

- ☐ Have you written a narrative description of your research steps?
- ☐ Have you statistically analyzed the evidence collected by the various methods used, examining relationships among the different variables?
- ☐ Have you prepared charts, graphs, or tables displaying the statistical results of your research?
- ☐ Have you written a description of your research findings?
- ☐ Have you written an analysis of the results of your research, showing how the results help to answer your research question?

UNIT TITLE: Constructing and Administering a Survey

Generic skill objectives:

To construct a survey instrument which effectively elicits the information which is sought.

To administer a survey instrument adequately and accurately.

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Procedural skill objectives:

1. The student will construct a survey instrument which helps measure the concepts contained in the original research question.

2. The construction of the survey instrument will use the several types of question studied, such as, forced choice, rating, open-ended, and specific answer, in a mix that will both interest the interviewee and develop with some validity, the needed information.

3. The student can administer the survey instrument in a manner which adequately gathers the sought-for information, and record the data in an accurate manner.

Prerequisite procedural skills:

1. Ability to formulate survey questions that are open-ended, forced choice, rating and specific.

2. Ability to develop a logical plan to achieve desired goal.

3. Ability to interview.

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Concepts developed:

1. See Units 10 and 14.

Prerequisite concepts:

1. See Units 10 and 14.

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Readings and/or required supplemental materials:

Refer to Unit 10 recommended readings.

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General description of unit activity (i.e., what the student does):

The student is engaged in constructing a survey instrument that will be useful in answering his broad research question. He may develop more than one instrument for more than one population. The advice and questions are for him to guide his work.

Use one or more class periods to have each student answer the 10 questions concerning his instrument. You may use small group peer discussions, after class meetings with individual students, and representative student instruments to help the class as a whole with this element of the project.

Independent Project Report #3 should be distributed with Worksheet 0 and returned after the worksheet has been discussed and collected. Full instructions for the Independent Project Report are contained in Unit 13.

Teacher responsibilities and suggestions for instructor:

The key consideration in this phase of the independent project is that the student understand how the survey can help him measure one or more of the concepts in his original question. He should understand that he is not gathering just any kind of information with the survey, rather he is seeking to answer a specific question with several concepts in it.

Any question in the survey that does not fulfill this mission does not belong in the survey. (For example, do not ask the sex or age of the interviewee if this answer does not help you measure one of the concepts in the original question.)

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Work to be handed in/evaluated:

Survey instrument(s) and narrative of where, when, how, and why the survey took place. (Representative case.) You will score the: 1) construction of the instrument according to the criteria of PURPOSIVENESS and SELF-DIRECTEDNESS. You will score: 2) the narrative of the conduct of one interview according to the criteria of PERFORMANCE.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 1 - 2 classes.

TIME FOR STUDENT COMPLETION OF WORK: No more than 1 week.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 1 - 2 classes.

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How does this unit relate to previous and future work:

PREVIOUS: This unit is the first or second guided methodological step of the independent project. It realizes part of the plan designed in Unit 14.

FUTURE: The student need not begin his project with a survey. He may choose to begin it with a behavioral observation. You will have to help students individually who choose to begin their design with methods which are more fully explained in later units (i.e., behavioral observation).

You may consider the following questions and advice in developing and administering the surveys you will need to answer your research question.

ADVICE ON CONSTRUCTING A SURVEY INSTRUMENT

1. Use 8 to 20 questions in any survey so that you will have sufficient questions to design an effective survey instrument.

Do not use a different question for each of the 8-20 questions, rather, ask 5-7 questions that relate directly to the information you wish to gather, but ask each question in several different ways so that you can validate the responses you get.

You should ask each question as both a forced choice and a rating question so that you can cross-check the answers given in each case. An open-ended question that pertains to the same sought-for information will allow you to see if the same answer is offered that you received in the forced choice and the rating.

2. The use of forced choice and rating questions will allow you to easily develop statistics from the answers you receive.

3. A survey instrument is to be constructed with care for its design. It should be an interesting experience for the interviewee and it should elicit all the information sought by the interviewer.

Consider a survey instrument like a siphon, wide at the top, getting narrower at the base. The instrument should begin with either an open-ended question or a rating question, each of which are broad, intended to elicit the most sweeping consideration of the topic your research is about. A broad beginning will allow the interviewee to give wide-ranging thought to a question that can then be narrowed as you ask further questions.

The open-ended question (What is the meaning of life?) allows the widest response. From these answers you can broaden your own view. The rating question at the beginning acts as a stimulus for interest; the interviewee does not have to think deeply into the special problems of the questions, he need only give a rating to a well-phrased general question (How would you rate life on a scale of 1 through 5?).

Then, move down to forced choice questions which create thoughts for the interviewee to respond to (Life is (pick one): a) a journey where you go around once; b) an eternal workplace; c) a bowl of cherries; or d) none of the above). Such keying of the thought of the interviewee allows you to test your own cultural assumptions of the research you are doing.

4. Specific answer questions permit the gathering of certain facts which you believe are needed to give you a thorough answer to your research question.

5. Try to educate the interviewee into thinking more intensely about the question you are trying to answer in your research by the thought contained in each question, the way you ask the question, and the ordering of your questions.

For example, if you begin with an open-ended question to which the interviewee gives a certain answer, you might end the interview with an open-ended question that directs itself to the nature of his first answer. (For example, you asked "What is the meaning of life?", and he included as high in his answer list, "Living it fully." As the survey concludes, you add the extra open-ended question not on your survey instrument, "Could you talk more about the meaning of living life fully?". A cultural analysis of his answer will give you more data to consider.

The structuring of the written survey instrument itself can key the progressive thought of the interviewee. If you use forced choice questions that explore popular cultural thinking on a question and follow these forced choice questions with rating questions, you can see both what ideas the interviewee chooses and how much he cares for the answers. Always give him a chance to provide his own answers to what you are seeking in your questions by including more focused open-ended questions throughout the instrument.

<u>You must guide the interviewee, but always allow him to provide his own insights.</u>

## QUESTIONS TO GUIDE CONSTRUCTION OF YOUR SURVEY INSTRUMENT

1. Do the questions you wish to ask contribute to the research question that guides all the research you are doing? How does each question you plan to ask help you answer the original research question that guides your independent project?

2. Why are you conducting a survey? How will a survey help you answer the question that is guiding your research?

3. What are the basic 5-7 questions which will elicit the information you are seeking? How could you ask each question several ways to validate the answers?

4. What concept (in your original research question) is being measured by the answers to each of these smaller questions of the survey instrument?

5. Explain to another person why your survey design is interesting to answer and how each question's <u>type</u>, <u>content</u>, and <u>ordering</u> in the instrument lends to that interest.

6. Could you get more exact information by running a survey on a sample population that allows you to select persons who can give the best answers and then give a second survey in depth to those persons? Would this bias your information? Or, could you consider the second group as more representative?

7. How did you select your sample population for the survey? If you chose your sample systematically (non-random), what methods did you use to assure a minimum of bias?

8. What would the best method for selecting a sample population for your survey be, random or non-random? Explain your answer to another person.

9. At times, circumstances force us to use economy in our selection of sample populations, the questions we ask, etc.. For every choice you have made with economy in mind, either in selecting your sample, or in the construction of your survey questions, explain why you needed to be economical and how your choice reflects economy.

10. How has information you have gathered from other research methods in your project (behavioral observation, etc.) led to the questions you have chosen to ask? Can you develop questions that will build on the information gathered from other methods, exploring the information in more depth through the questions?

(Remember, you are measuring concepts through the survey instrument. The same concepts were also measured by the other research methods, such as behavioral observation, performance testing, etc..)

## ADVICE ON CONDUCTING A SURVEY INTERVIEW

1. Write a preamble to the survey instrument which is in simple, straightforward language, which introduces you and your affiliation, and gives the interviewee the purpose of the survey (without biasing his attitude). You need not write a review of the entire project in the preamble; it will be enough to tell the interviewee the general issue which you are seeking to gather information about.

2. Select your samp e population beforehand and think through the kinds of people you will be in erviewing and the types of settings in which you will conduct the interview. (A written or oral interview that can be conducted in the presence of the interviewee is best for purposes of this project. You will get a solid experience in field surveys.) Plan the time for the interview, and the setting, with comfort and a minimum of effort for both you and the interviewee in mind.

3. Try to make an appointment with the interviewee for a specified time. Plan your interviewing schedule before you begin to conduct the interviews. If you must plan on meeting people in an unplannable situation, keep your interview questions short and the whole instrument as economic as possible.

4. Always ask permission of the authority responsible for the place in which you conduct your survey.

## QUESTIONS TO GUIDE THE CONDUCT OF A SURVEY

1. Have you contacted your sample population to arrange interviews?

2. Have you reviewed the constraints on time and comfort that might make the interview less than effective?

3. Have you planned for additional questions that might elicit more information? (Such additional questioning would have to be uniform for the whole sample.)

4. Did you bias the interview at any time with personal remarks of tone of voice?

5. Who gave you the best interview? Why? Who gave you the worst interview? Why?

6. How could you improve your interview technique the next time you administer the survey instrument?

NARRATIVE OF RESEARCH STEP

NAME OF RESEARCH METHOD USED _____

WHERE RESEARCH OCCURRED _____

WHEN RESEARCH OCCURRED _____

WHY RESEARCH METHOD WAS USED, AND WHY THIS PARTICULAR SETTING WAS CHOSEN FOR INVESTIGATION _____

DESCRIBE THE MOMENT TO MOMENT CONDUCT OF YOUR RESEARCH WITHIN THE SETTING. DETAIL HOW YOU USED YOUR INSTRUMENT(S), WHAT YOU SAW OR SAID, WHAT THE PERSONS DID WHO YOU WERE INVESTIGATING, WHAT EVIDENCE YOU GATHERED, ETC..

UNIT 15 CONSTRUCTING A SURVEY INSTRUMENT

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance
   a. adequacy
   b. accuracy

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Clarity of concept, definition, statement

(4) - The question is stated clearly. It contains the concept to be measured either explicitly or implicitly.

(3) - Errors in clarity and thoroughness of concept, definition, and statement occur, but the meanings are clear enough to allow correction of basic ideas presented.

(2) - Some major conceptual or definitional element must be added in order to allow for further work.

(1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of questions, concepts, etc.).

   b. Coherence in rationale

(4) - The meaning of the question is logically related to the purpose of the research.

(3) - The meaning of the question is somewhat vague given the purpose of the research.

(2) - The meaning of the question is not directed to the research; a confusion of this stop of the project's purpose or meaning may be present in the student.

(1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

   a. Economy

(4) - The selection of response makes its points with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

a. Economy (cont'd.)

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The planned question is appropriate for answering the broader research question which guides the independent project.

(3) - The planned question is not exactly suitable for answering the broader question, but it demonstrates an attempt to logically respond.

(2) - The selection of the question is unsuitable to the broader question posed in a degree that shows misunderstanding of this phase of the research.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in the formulation of survey questions.

3. Performance

a. Adequacy of performance

(4) - The thoroughness which each step is carried out satisfies the scope of the expected data collection.

(3) - There is not adequate thoroughness in the conduct of the research to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

a. Adequacy of performance (Cont'd.)

(2) - There is a lack of accuracy in the process and direction of research which warrants repetition of the research step.

(1) - The response is inadequate to the degree that tutorial intervention is called for in instruction of the research methods themselves, and in the idea of following a planned sequence of stops.

UNIT 15 WORKSHEET O CONSTRUCTING A SURVEY

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | AP | PP | % |
| Score each question on the survey. | | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

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AP - Actual Points

PP - Possible Points

UNIT 15 WORKSHEET O ADMINISTERING A SURVEY INSTRUMENT

| WORKSHEET QUESTIONS/ PROCEDURES | PERFORMANCE | | | SCORE | | | KEY |
|---|---|---|---|---|---|---|---|
| | Adequacy | Accuracy | | AP | PP | % | 4 - Good<br>3 - Satisfactory<br>2 - Improvement Needed<br>1 - Inadequate<br>NA - Not Applicable Here<br>---<br>AP - Actual Points<br>PP - Possible Points |
| Score the Performance on Basis of the Narrative Report | | | | | | | |

## RESEARCH DESIGN

- ☐ Have you formulated a research question?
- ☐ Have you named and nominally defined the concepts involved in your research question?
- ☐ Have you operationally defined the concepts involved in your research question?
- ☐ Have you outlined a series of research procedures which will enable you to gather evidence to answer your research question?

## CULTURAL ANALYSIS

- ☐ Have you considered the social significance of your question and how a definitive answer might affect or improve society?
- ☐ Have you explored the origin of your question and its personal meaning in your own life and experience?
- ☐ Have you analyzed the cultural background, setting, and forces which might influence your research design?
- ☐ Have you explored the possibility of personal biases concerning your question which might affect your research design?

## BEHAVIORAL OBSERVATION

- ☐ Have you planned a behavioral observation to gather information on your research question?
- ☐ Have you planned a system for selecting a sample for your behavioral observation?
- ☐ Have you designed an instrument for recording the information gathered during your behavioral observation?
- ☐ Have you conducted your behavioral observation?
- ☐ Have you described, statistically, the results of your behavioral observation?

## SURVEY

- ☐ Have you planned a survey to gather information on your research question?
- ☐ Have you constructed the survey instrument and tested it for clarity?
- ☐ Have you planned a system for selecting a sample for your survey?
- ☐ Have you administered your survey?
- ☐ Have you described, statistically, the results of your survey?

## OTHER EVIDENCE

- ☐ Have you used physical-trace evidence as a source of information for your study?
- ☐ Have you used performance-testing as a source of evidence for your study?
- ☐ Have you used physical-testing as a source of information for your study?

## REPORTING RESULTS

- ☐ Have you written a narrative description of your research steps?
- ☐ Have you statistically analyzed the evidence collected by the various methods used, examining relationships among the different variables?
- ☐ Have you prepared charts, graphs, or tables displaying the statistical results of your research?
- ☐ Have you written a description of your research findings?
- ☐ Have you written an analysis of the results of your research, showing how the results help to answer your research question?

UNIT TITLE: Constructing and Administering a Behavioral Observation Instrument

Generic skill objectives:

To construct an instrument which helps one effectively measure indicators of behavior.

To administer a behavioral observation instrument adequately and accurately.

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Procedural skill objectives:

1. The student will construct a behavioral observation instrument which helps measure the concepts contained in the original research question.

2. The student will administer the behavioral observation instrument in a manner which adequately gathers the sought-for information and records the data in an accurate manner.

Prerequisite procedural skills:

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Concepts developed:

See Units 9 and 14.

Prerequisite concepts:

See Units 9 and 14.

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Readings and/or required supplemental materials:

Refer to Unit 9 recommended readings.

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General description of unit activity (i.e., what the student does):

The student is engaged in constructing a behavioral observation instrument that may be useful in answering his broad research question. He may develop more than one instrument for more than one population. The advice and questions are for him to guide his work.

Use one or more class periods to have each student answer the several questions concerning his instrument. You may use small group peer discussions, after class meetings with the individual students, and representative student instruments to help the class as a whole with this element of the project.

Independent Project Report #4 should be distributed with Worksheet P and returned after the worksheet has been discussed and collected. Full instructions for the Independent Project Reports are contained in Unit 13.

Teacher responsibilities and suggestions for instructor:

The key consideration in this phase of the independent project is that the student understand how a behavioral observation can help him measure one or more of the concepts of his original question. He should learn the importance of a good instrument to help focus and record his perceptions.

The conduct of the observation, as it was with the survey, is real field research; probably the first of its kind for the student. Be sure to stress the importance of a careful research method to guarantee objectivity when one seeks information in these "quasi-experimental" situations.

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Work to be handed in/evaluated:

Behavioral observation instrument(s) and narrative of where, when, how, and why the survey took place. (Representative case.)

You will score the: 1) construction of the instrument according to the criteria of SELF-DIRECTEDNESS. You will score: 2) the narrative of the conduct of one observation according to the criteria of PERFORMANCE.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: 1 - 2 classes.

TIME FOR STUDENT COMPLETION OF WORK: No more than 1 week.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: 1 - 2 classes.

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How does this unit relate to previous and future work:

PREVIOUS: This unit is either the first or second guided methodological step of the Independent Project. It realizes part of the plan designed in Unit 14.

FUTURE: The student need not begin his project with a behavioral observation or follow a survey with one--the ordering of this step will be contingent on the research question and the most economical selection of methodological steps. Help the student see what is in Unit 14.

UNIT 16 WORKSHEET P CONSTRUCTING AND ADMINISTERING A BEHAVIORAL OBSERVATION INSTRUMENT

You may consider the following questions and advice in developing and administering the behavioral observation(s) you will need to answer your research question.

## ADVICE ON CONSTRUCTING A BEHAVIORAL OBSERVATION INSTRUMENT

1. Determine whether you will simply want to describe the activities or whether you will want to count how many times a behavior occurs, also. You cannot do both things at once, and thus, you may need more than one instrument.

2. Be clear about the specific question (and thus concept) which the behavioral observation will help answer (i.e., measure).

3. If you count behaviors, build in a totals column on the instrument that will allow you to quickly estimate mean, median, and percentages.

4. Draw beforehand, the space in which you will perform the behavioral observation from a bird's eye view detailing the amount of feet, persons, etc., between you and those whom you will observe. In this manner you can predict inconveniences and interferences that might arise during the observation and plan a more effective observation placement.

5. Don't look for many behaviors in any one instrument. Be modest, for you must respect the human limits of observation.

6. After completing your instrument, mentally visualize what you might be looking at if you followed the steps of your design. Practice using it in an informal situation, too.

7. Locate model instruments which can give you ideas for your own design. The teacher will give you tips in this regard. (The library might catalog such instruments under GROUP DYNAMICS, BEHAVIORAL OBSERVATION, SMALL GROUP RESEARCH, and other headings which referred to social scientific research that would use this method.)

## QUESTIONS TO GUIDE CONSTRUCTION OF THE BEHAVIORAL OBSERVATION INSTRUMENT

1. Do the behaviors you will describe or count contribute to the research question that guides all the research you are doing? What concept in your original question does the instrument measure?

2. Why are you conducting a behavioral observation? Could you answer your original research question without a behavioral observation? Why does such an observation help you answer your question?

3. Would it be better to conduct the observation before a survey or after a survey? How might survey evidence help you plan a better behavioral observation? (And, how might a behavioral observation help you plan a better survey?)

## QUESTIONS TO GUIDE CONSTRUCTION (CONTINUED)

4. Are you a participant in the group you plan to survey? Will such membership bias the behaviors of those persons you will observe? If you are a group member, could you find a similar group of which you are not a member so that you could perform a non-participant observation?

5. How did you select your sample population for the observation? If you chose your sample systematically (non-random), what methods did you use to assure a minimum of bias?

6. At times, circumstances force us to use economy as our selection of sample populations, the design of our instrument, the indicators we use to measure the concepts, etc.. For every choice in these matters that you made with economy in mind, explain why you needed to be economical and how your choice reflects economy.

## ADVICE ON CONDUCTING A BEHAVIORAL OBSERVATION

1. Discuss your presence and purposes with the people you will observe if it is possible, and will not interfere with the conduct of their normal behaviors. If you must observe unobtrusively, be prepared with a coherent, non-threatening explanation of your actions.

2. Always ask permission of the authority responsible for the space in which you conduct your observation.

3. Select your sample population beforehand, and think through the kinds of people you will be observing and the types of settings in which you will be observing. Plan for any needs that you think of that result from the type of setting or people. Can you meet the people beforehand and discuss your project? Can you find seating for observation in the midst of the activity? Etc..

4. If you can enlist the help of a co-observer, it will strengthen the objectivity of the facts you gather.

5. Obtain information about what the nature of the meeting of persons you will observe pertains to at the time you observe. You should be mentally prepared for the activities which occur around you. You should understand the purposes of the project in which the people are involved so that their behaviors can be understood in the light of their goals.

## QUESTIONS TO GUIDE THE CONDUCT OF A BEHAVIORAL OBSERVATION

1. Have you cleared the observation with the necessary authorities.

2. Have you pre-selected your sample?

3. Have you drawn the room and placed yourself as an observer?

4. Have you developed a coherent explanation of your presence, if that is required?

5. Is your instrument economical in its design?

6. Have you limited the indicators observed to those which can be done by you in an actual setting?

## QUESTIONS TO GUIDE THE CONDUCT OF A BEHAVIORAL OBSERVATION (CONTINUED)

7. Have you mentally rehearsed what might occur? Have you practiced with the instrument in informal settings?

8. Did you change what you were looking for in the midst of the observation (a No-No!)?

9. Did you observe any one person with an intensity or amount of time not given equally to other persons in your sample during the observation?

10. Did your instrument permit the accurate recording of the type of information you were seeking?

11. Could you have positioned yourself differently in order to make a more accurate observation of the persons in your sample?

12. How could your observation instrument be more effectively designed to measure the concepts you are measuring?

13. What different indicators could be used to more effectively measure the concept you are interested in.

NARRATIVE OF RESEARCH STEP

NAME OF RESEARCH METHOD USED _____

WHERE RESEARCH OCCURRED _____

WHEN RESEARCH OCCURRED _____

WHY RESEARCH METHOD WAS USED, AND WHY THIS PARTICULAR SETTING WAS CHOSEN FOR INVESTIGATION _____

DESCRIBE THE MOMENT TO MOMENT CONDUCT OF YOUR RESEARCH WITHIN THE SETTING. DETAIL HOW YOU USED YOUR INSTRUMENT(S), WHAT YOU SAW OR SAID, WHAT THE PERSONS DID WHO YOU WERE INVESTIGATING, WHAT EVIDENCE YOU GATHERED, ETC..

2. Self-directedness

a. Economy

(4) - The design of instrument makes its point with a minimum of graphics, words, etc.. It is not redundant, and is sufficient to satisfy the purpose.

(3) - The design of instrument may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice in graphic design of observational instruments, and the selection of behavioral indicators.

b. Originality

(4) - The design of instrument shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions, and the graphic design.

(3) - The selection of response reflects previous model answers given to class but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The design of the instrument is appropriate for the nature of the concept to be measured (and the broader question to be answered).

(3) - The design of the instrument is not exactly suited to the nature of the concept to be measured, but it demonstrates an attempt to logically respond.

(2) - The design of the instrument is unsuitable to a degree that shows misunderstanding of the task.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals.

3. Performance

a. Adequacy of performance

(4) - The thoroughness with which each step is carried out satisfies the scope of the expected data collection.

(3) - There is insufficient thoroughness to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

(2) - The thoroughness of performance is wanting to the degree that it must be repeated.

(1) - The response is inadequate to the degree that tutorial intervention is called for in matters of logical planning and performance of the project steps.

b. Accuracy of performance

(4) - Each step is carried out accurately.

(3) - There is enough accuracy in research performance to have gathered some useful information; but, the research steps should be repeated, at least in part.

(2) - There is a lack of accuracy in the process and direction of research which warrants repetition of the research step.

(1) - The response is inadequate to the degree that tutorial intervention is called for in instruction of the research methods themselves and in the idea of following a planned sequence of events.

| WORKSHEET QUESTIONS/ PROCEDURES | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|
| | Originality | Economy | Suitability | AP | PP | % |
| Score the survey design as a whole (1 grade for originality, economy, and suitability) | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points



230

| WORKSHEET QUESTIONS/ PROCEDURES | PERFORMANCE | | | SCORE | | |
|---|---|---|---|---|---|---|
| | Adequacy | Accuracy | | AP | PP | % |
| Score the PERFORMANCE on basis of the narrative report. | | | | | | |

KEY

4 - Good
3 - Satisfactory
2 - Improvement Needed
1 - Inadequate
NA - Not Applicable Here

---

AP - Actual Points
PP - Possible Points

INDEPENDENT PROJECT REPORT #4 NAME_____

## RESEARCH DESIGN

- ☐ Have you formulated a research question?
- ☐ Have you named and nominally defined the concepts involved in your research question?
- ☐ Have you operationally defined the concepts involved in your research question?
- ☐ Have you outlined a series of research procedures which will enable you to gather evidence to answer your research question?

## CULTURAL ANALYSIS

- ☐ Have you considered the social significance of your question and how a definitive answer might affect or improve society?
- ☐ Have you explored the origin of your question and its personal meaning in your own life and experience?
- ☐ Have you analyzed the cultural background, setting, and forces which might influence your research design?
- ☐ Have you explored the possibility of personal biases concerning your question which might affect your research design?

## BEHAVIORAL OBSERVATION

- ☐ Have you planned a behavioral observation to gather information on your research question?
- ☐ Have you planned a system for selecting a sample for your behavioral observation?
- ☐ Have you designed an instrument for recording the information gathered during your behavioral observation?
- ☐ Have you conducted your behavioral observation?
- ☐ Have you described, statistically, the results of your behavioral observation?

## SURVEY

- ☐ Have you planned a survey to gather information on your research question?
- ☐ Have you constructed the survey instrument and tested it for clarity?
- ☐ Have you planned a system for selecting a sample for your survey?
- ☐ Have you administered your survey?
- ☐ Have you described, statistically, the results of your survey?

## OTHER EVIDENCE

- ☐ Have you used physical-trace evidence as a source of information for your study?
- ☐ Have you used performance-testing as a source of evidence for your study?
- ☐ Have you used physical-testing as a source of information for your study?

## REPORTING RESULTS

- ☐ Have you written a narrative description of your research steps?
- ☐ Have you statistically analyzed the evidence collected by the various methods used, examining relationships among the different variables?
- ☐ Have you prepared charts, graphs, or tables displaying the statistical results of your research?
- ☐ Have you written a description of your research findings?
- ☐ Have you written an analysis of the results of your research, showing how the results help to answer your research question?

UNIT TITLE Analyzing Results

Generic skill objectives:

To analyze evidence collected by various methods.
To infer conclusions from evidence.

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| Procedural skill objectives: | Prerequisite procedural skills: |
|---|---|
| To construct cross-tabulation charts. | Ability to figure basic descriptive statistics (Unit 11). |
| To construct scattergrams. | |
| To conduct post-research cultural analysis. | |

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| Concepts developed: | Prerequisite concepts: |
|---|---|
| cross-tabulation | mode |
| scattergram | median |
| correlation | mean |

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Readings and/or required supplemental materials:

Intro to Social Research, Chapter 6 (esp. pp. 100-112).
The Science Game, Chapter 10 (esp. pp. 144-158) and Chapter 11.

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General description of unit activity (i.e., what the student does):

Student is given Worksheet Q1 after basic discussion of causality.

After completing Worksheet Q 1, teacher discusses concepts and applies procedures to data collected by students.

Worksheet Q 2 is completed by students and discussed in conjunction with the actual data collected by students.

Independent Project Report #5 should be distributed with Worksheet Q 1 and returned after Worksheet Q 2 has been discussed and collected. Full instructions for the Independent Project Reports are contained in Unit 13.

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Teacher responsibilities and suggestions for instructor:

Discuss correlation carefully, providing many graphic examples.

Stress the dangers involved in jumping too quickly from evidence of correlation to belief in cause.

Work to be handed in/evaluated:

Worksheet Q 1: coherence (1B, 3), suitability (all).

Worksheet Q 2: coherence (1B - 3D), economy (1C, 1D, 2A-D, 3B-D), suitability (all).

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS: Q 1: 50 minutes, Q 2: 10 minutes.

TIME FOR STUDENT COMPLETION OF WORK:

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Q 1: 50 minutes, Q 2: 50 minutes.

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How does this unit relate to previous and future work:

PREVIOUS: Builds on concepts developed in Unit 11 and on data collected in Units 12 - 16.

FUTURE: Provides students with practice in analysis and reasoning necessary for completion of final report (Unit 18).

UNIT 17 WORKSHEET Q 1 ANALYZING EVIDENCE

One of the most used varieties of analysis in the social sciences involves checking to see whether or not two variables are related to each other. If two variables are related, they are said to be correlated; for example, if a scientist weighs people and measures their height, he will undoubtedly discover that, on the average, tall people weigh more than short people--that there is a correlation in human beings between height and weight. Similarly, a sociologist who collects evidence concerning crime rates and income will discover that people with low incomes tend to be arrested for crimes more frequently than people with high incomes.

In itself, a correlation between two variables does not prove anything, but it strongly suggests that the scientist would be wise to explore further for the possibility that there is a causal connection exists between the variables. There are several possibilities:

(1) One variable may be the cause of the other: poverty may cause people to commit crimes.
(2) One variable may affect other intervening factors (which the researcher has not measured), and these factors, in turn, affect the other variable: poverty may tend to decrease people's opportunity for education and lack of education may tend to cause people to commit crimes.
(3) Both variables may be the result of some cause which has not been measured by the research: the overall physical structure and size of an individual ("frame") may determine both his height and weight.
(4) The variables may correlate accidentally--there may, on further study, be no real connection between them at all.

After having measured and described the individual variables measured by the researcher, the next step is to look for a correlation. There are several ways to go about this. First, the researcher may construct a cross-table (i.e., he may cross-tabulate the variables):

HEIGHT

| WEIGHT | under 5'3" | 5'3" - 5'6" | 5'6" - 5'9" | 5'9" - 6' | over 6' |
|---|---|---|---|---|---|
| under 100 lbs | 15 | 9 | 4 | 1 | 0 |
| 100 - 125 lbs | 10 | 13 | 8 | 4 | 0 |
| 125 - 150 lbs | 7 | 11 | 15 | 6 | 2 |
| 150 - 175 lbs | 3 | 5 | 11 | 9 | 5 |
| 175 - 200 lbs | 1 | 5 | 8 | 14 | 7 |
| over 200 lbs | 1 | 2 | 6 | 9 | 12 |

Each "cell" or "block" on the cross-tabulation chart is filled with a number representing the people who fit those categories; for example, 13 people were found to be between 100 and 125 pounds and between 5'3" and 5'6" in height.

By examining the chart, one can easily see that height and weight are related: the cells in the chart with the highest numbers all fall along a diagonal line (from the upper left to the lower right), while the cells which are not on this diagonal line contain small numbers.

1A. Using the data at the right, fill in the cross-tabulation chart below. Then discuss whether or not the two variables are correlated.

| SUBJECT | AGE | HOURS OF TV WATCHED PER WEEK |
|---|---|---|
| 1 | 49 | 5 |
| 2 | 21 | 12 |
| 3 | 35 | 7 |
| 4 | 16 | 24 |
| 5 | 71 | 15 |
| 6 | 24 | 11 |
| 7 | 63 | 0 |
| 8 | 17 | 18 |
| 9 | 51 | 6 |
| 10 | 33 | 8 |

HOURS OF TV WATCHED

| | 0 - 4 | 5 - 8 | 9 - 12 | 13 - 16 | 17 - 20 | 21 - 24 |
|---|---|---|---|---|---|---|
| 0 - 18 | | | | | | |
| 19 - 26 | | | | | | |
| 27 - 35 | | | | | | |
| 36 - 45 | | | | | | |
| 46 - 60 | | | | | | |
| 61 or more | | | | | | |

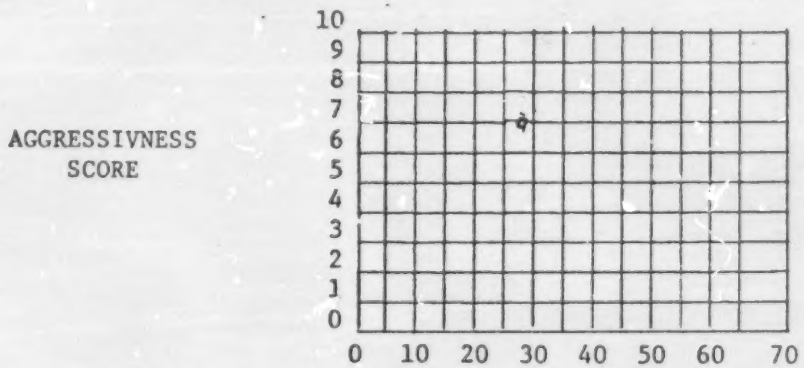
1B. Is there evidence of a correlation between age and TV watching? If so, describe the ways in which they seem to be related? If not, how do you explain the pattern of data on the cross-tabulation chart?

A second method of determining whether two variables are correlated by creating a scattergram; this is a graphic display of the interrealationship between the two variables.

Imagine a social scientist is trying to find out whether or not eating meat has an effect on people's aggressiveness, their tendency to get into fights. He conducts a survey to discover how much meat (in ounces) each of his subjects eats each week, and then uses a variety of measures (survey, observation, behavioral tests) to determine each subject's aggressive tendencies. These measures are combined into a single aggressiveness score for each subject:

| SUBJECT | OUNCES OF MEAT EATEN PER WEEK | AGGRESSIVENESS SCORE |
|---|---|---|
| 1 | 28 | 7 |
| 2 | 0 (vegetarian) | 3 |
| 3 | 56 | 9 |
| 4 | 8 | 4 |
| 5 | 34 | 5 |
| 6 | 12 | 2 |
| 7 | 40 | 6 |
| 8 | 56 | 8 |
| 9 | 35 | 8 |
| 10 | 15 | 3 |

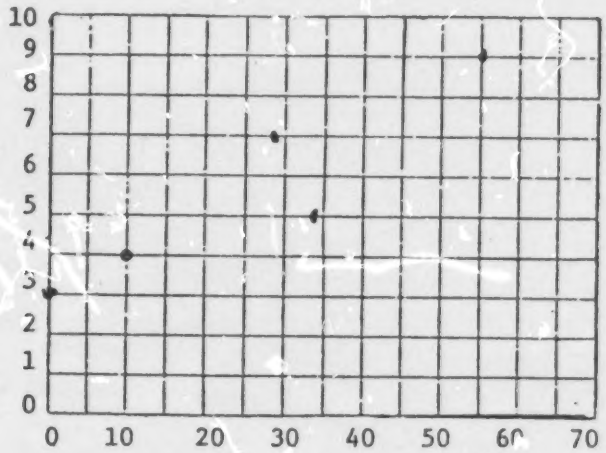
To make a scattergram, you must first construct a graph in which each of the variables can be plotted. The graph below is an example.




A dot is placed on the scattergram to correspond with each subject. The dot on the chart above represents subject #1: it is on the line which indicates that subject #1 had an aggressiveness score of 7, and on the vertical column, roughly matching the fact that subject #1 ate between 25 and 30 ounces of meat in the previous week.

Dots are placed on the scattergram for each of the subjects. Below the dots for subjects 1 through 5 have been placed:

AGGRESSIVENESS SCORE

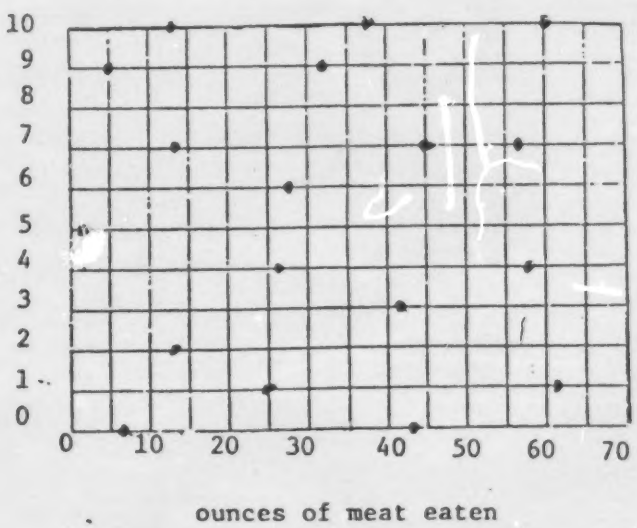



2. Place dots on the scattergram above corresponding to cases 6 through 10.

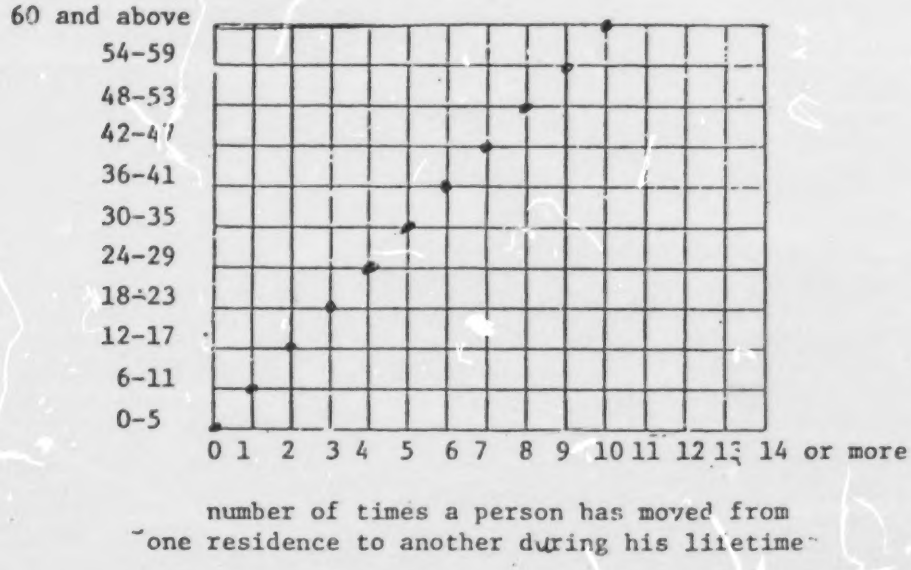
3. Does the pattern of dots on the scattergram indicate a relationship between aggressiveness and the amount of meat a person eats?

There are two extreme possibilities for the way dots will arrange themselves on a scattergram (although most real cases fall somewhere in-between the extremes). One possibility is that the dots will be randomly spread all over the scattergram, indicating that there is <u>no</u> relationship between the variables. Social scientists refer to this as a 0 correlation (zero correlation)--that is, <u>no</u> correlation:

AGGRESSIVENESS SCORE

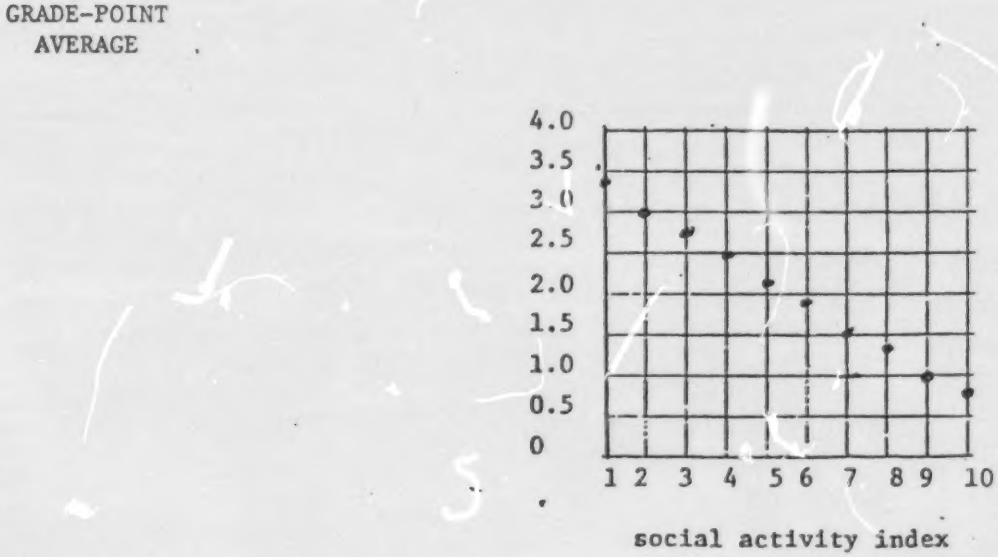


The other extreme is that the dots will all fall into a single row, a straight line, as in the chart below (which compares the age of a person with the number of times he has moved during his lifetime):




This is called a "perfect" correlation, or a correlation of 1; with such a close relationship between two variables, one can be predicted from the other. If, for example, you know a person's age, you can predict with certainty (from the chart) how many times he will have moved.

A related possibility is the chart below:




Again, the dots here form a straight line; the correlation is "perfect" but, because as social activity increases, the students' grade-point averages declines, the correlation is called a "negative" one--or a -1 correlation.

In doing real research, it is very rare to find perfect correlations (i.e., either +1 or -1 correlations). What you should watch for is the dots on a scattergram arranging themselves in something close to a straight line (or, more likely, a broad stripe). This will indicate a high (but not perfect) correlation. There are sophisticated mathematical techniques for measuring how close the dots come to a perfect straight line, and these techniques produce a number--a correlation coefficient--with a value between -1 and +1. In reading about the results of social science experiments you will come across many references to these correlation coefficients: "a correlation of 0.7," "a negative correlation of -0.87," etc..

UNIT 17 WORKSHEET Q 1

EXAMPLE OF MEASURING COAL-DIRECTED ACTIVITY IN ACADEMIC RESEARCH WITH THE AFOREMENTIONED MEASUREMENT PRINCIPLES;

A WORKSHEET USED FOR STATING A RESEARCHABLE QUESTION IN LBST 101: INTRODUCTION TO SOCIAL SCIENCE

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Coherence
2. Self-directedness
   a. Suitability

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Coherence in rationale

   (4) - The meaning of the answer is logically related to the purpose of the question.

   (3) - The meaning of the answer is somewhat vague given the purpose of the question.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

   a. Suitability (to purpose)

   (4) - The selection of response is appropriate for the nature of the question.

   (3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

   (2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

WORKSHEET Q1

UNIT 17

| WORK-SHEET QUES TIONS/ PRO-CEDURES | PURPOSIVENESS | SELF-DIRECTEDNESS | SCORE | |
|---|---|---|---|---|
| | Coherence | Suitability | AP | PP |
| 1 A | | | | |
| 1 B | | | | |
| 2 | | | | |
| 3 | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 17 WORKSHEET Q 2 POST-RESEARCH CULTURAL ANALYSIS

After you have collected all the evidence called for in your research design, you should begin analysis and interpretation of the evidence. The procedures to be followed at this stage include the following:

1. DESCRIPTION OF EVIDENCE: calculate the statistics which describe each of the variables you have measured: minimum, maximum, range, mode, median, mean. These can be presented in charts (with each statistic named for each variable) or on graphs (such as bar graphs, line graphs, or pie graphs).

   A. Have you calculated the basic statistics for each of the variables you measured?

   B. What results surprised you most? Would you have predicted the results obtained accurately?

   C. Which methods of collecting evidence produced the most useable results? In which cases were the results obtained difficult to describe statistically?

   D. How does the description of the results obtained in measuring the individual variables help to answer your research question?

2. CORRELATION AMONG VARIABLES: choose those variables which might, if they are related to one another, help to answer your research question--that is, look at pairs of variables which might be connected to each other as cause and effect. For each pair of variables, construct either a cross-tabulation chart or a scattergram.

   A. Are there any pairs of variables which are strongly correlated (either positively or negatively)? Did you, when you began the experiment, expect that these pairs of variables would be related?

   B. Are there good logical or theoretical reasons for believing that these strongly correlated variables are causally connected? Can the strong correlations be explained in some other way (for example, that both are caused by some third variable which you did not mearsure)?

   C. Are there pairs of variables which seem, from the data, to be unrelated or which are weakly correlated? Were any of these pairs ones which you, at the beginning of the research, expected to find strong correlations for? How do you account for the surprising results?

D. Can you now, using the analysis of the variables you studied, supply a partial or complete answer to your original research question? If you can, what data helped you formulate an answer? If you can't what additional evidence or variables might you have looked at?

3. CULTURAL ANALYSIS AND INFERENTIAL REASONING: write an analysis of the data obtained in your research, inferring the possible reasons why the evidence you collected took the form it did. For each significant piece of data, discuss its possible or probable causes, possible errors in sampling or measurement, and its relation to other pieces of data.

A. Does any of the evidence collected indicate clearly that the variables studied are causally related? If so, how?

B. Does the evidence collected indicate the presence of other factors or conditions which were not a part of your study? Are these factors ones which could be studied? What evidence do you have of their existence?

C. What conclusions concerning your original research question have you been able to reach on the basis of the data collected?

D. What are the implications of your conclusions for education in general? Can you suggest, on the basis of your research, beneficial changes? If no changes occur, what predictions can you make, from your research, concerning education in the future?

UNIT 17 WORKSHEET Q 2

E. EXAMPLE OF MEASURING GOAL-DIRECTED ACTIVITY IN ACADEMIC RESEARCH WITH THE AFOREMENTIONED MEASUREMENT PRINCIPLES:

A WORKSHEET USED FOR STATING A RESEARCHABLE QUESTION IN LBST 101: INTRODUCTION TO SOCIAL SCIENCE

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   b. Coherence in rationale

   (4) - The meaning of the answer is logically related to the purpose of the question.

   (3) - The meaning of the answer is somewhat vague given the purpose of the question.

   (2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

   (1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

OPERATIONAL DEFINITIONS OF MEASUREMENT PRINCIPLES

1. Economy (1b, 1e; 2a, b, c, d; 3a(1), (2))

   (4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

   (3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

   (2) - The response must be limited both in length and kind in order to make further work possible.

   (1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and in critical thinking skills of logic and inference.

2. Originality (1e; 2a, b, c, d; 3c)

(4) - Originality is shown in the ideas discussed and in the possibilities examined.

(3) - The response reflects awareness of the data collected, but does not speculate on imaginative additional possibilities.

(2) - The response is stereotypic to a degree that reflects a lack of seriousness in the attempt to answer question in a creative, independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of meaningful responses.

3. Suitability (all answers on worksheet)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to test student's understanding of the unit activity and worksheet.

UNIT 17 WORKSHEET Q 2

| WORK-SHEET QUES-TIONS/ PRO-CEDURES | PURPOSIVENESS | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|
| | Coherence | Originality | Economy | Suitability | AP | PP | % |
| 1 A | | | | | | | |
| B | | | | | | | |
| C | | | | | | | |
| D | | | | | | | |
| 2 A | | | | | | | |
| B | | | | | | | |
| C | | | | | | | |
| D | | | | | | | |
| 3 A | | | | | | | |
| B | | | | | | | |
| C | | | | | | | |
| D | | | | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not Applicable Here

---

AP - Actual Points

PP - Possible Points

INDEPENDENT PROJECT REPORT #5

NAME _____

RESEARCH DESIGN

- ☐ Have you formulated a research question?
- ☐ Have you named and nominally defined the concepts involved in your research question?
- ☐ Have you operationally defined the concepts involved in your research question?
- ☐ Have you outlined a series of research procedures which will enable you to gather evidence to answer your research question?

CULTURAL ANALYSIS

- ☐ Have you considered the social significance of your question and how a definitive answer might affect or improve society?
- ☐ Have you explored the origin of your question and its personal meaning in your own life and experience?
- ☐ Have you analyzed the cultural background, setting, and forces which might influence your research design?
- ☐ Have you explored the possibility of personal biases concerning your question which might affect your research design?

BEHAVIORAL OBSERVATION

- ☐ Have you planned a behavioral observation to gather information on your research question?
- ☐ Have you planned a system for selecting a sample for your behavioral observation?
- ☐ Have you designed an instrument for recording the information gathered during your behavioral observation?
- ☐ Have you conducted your behavioral observation?
- ☐ Have you described, statistically, the results of your behavioral observation?

SURVEY

- ☐ Have you planned a survey to gather information on your research question?
- ☐ Have you constructed the survey instrument and tested it for clarity?
- ☐ Have you planned a system for selecting a sample for your survey?
- ☐ Have you administered your survey?
- ☐ Have you described, statistically, the results of your survey?

OTHER EVIDENCE

- ☐ Have you used physical-trace evidence as a source of information for your study?
- ☐ Have you used performance-testing as a source of evidence for your study?
- ☐ Have you used physical-testing as a source of information for your study?

REPORTING RESULTS

- ☐ Have you written a narrative description of your research steps?
- ☐ Have you statistically analyzed the evidence collected by the various methods used, examining relationships among the different variables?
- ☐ Have you prepared charts, graphs, or tables displaying the statistical results of your research?
- ☐ Have you written a description of your research findings?
- ☐ Have you written an analysis of the results of your research, showing how the results help to answer your research question?

UNIT TITLE: Reporting Results

Generic skill objectives:

Compiling results of research into coherent accounts that show both the processes and the conclusions.

Inferring possible utilization of research results in cultural activity designed to improve what has been studied.

Procedural skill objectives:

1. The student writes accurate responses to an outline which guides compilation of his research results.
2. The student infers the possible utility of his findings for improving education.

Prerequisite procedural skills:

1. Gathering data with various social science methods.
2. Inferring from data.
3. Cultural analysis.

Concepts developed:

1. research report

Prerequisite concepts:

1. inquiry methods
2. concepts/indicators/definitions
3. cultural analysis

Readings and/or required supplemental materials: Labovitz and Hagedorn, Introduction to Social Research (Chapters 6 and 7).
Mck. Agnew and Pyke, The Science Game: An Introduction to Research in the Behavioral Sciences, second edition (Chapters 11-15). Worksheet R

General description of unit activity (i.e., what the student does):

The student is given adequate time to compile his results. Each class during this time (approximately 1-2 weeks; or 3 class sessions) reviews various aspects of the worksheet which guides compilation.

Discussion of the Labovitz and Hagedorn, and Mck. Agnew and Pyke selections will help with evaluation of data and with the cultural analysis of results.

Representative student work should be used to guide the rest of class with compilation of report. Use small peer groups who share the problems of compilation for part of each class.

Teacher responsibilities and suggestions for instructor:

Concentrate on showing how trends can be inferred from statistical analysis of samples. Show how the few facts can allow responsible inferences. Stress limitations of certainty, but support the evidence that is gathered. Help the student to feel a sense of accomplishment from the raw data he has gathered, by showing how this data can be compiled into meaningful graphs, interpretations, inferences, etc..

Labovitz and Hagedorn are especially informative on data analysis, although this course will not use their sophisticated statistical formulas. Arithmetical percentages are enough for the freshmen. He will learn more of statistics in future courses.

Mck. Agnew and Pyke are especially informative on writing the research report and integrating results into cultural movements related to the research.

Work to be handed in/evaluated:

Worksheet R (as finished research report)

The research report will be evaluated according to criteria of PERFORMANCE, PURPOSIVENESS, and SELF-DIRECTEDNESS.

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TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS:

TIME FOR STUDENT COMPLETION OF WORK: Approximately 1-2 weeks.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Approximately 3 classes.

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How does this unit relate to previous and future work; to next assignment.

PREVIOUS: It gathers data of independent research, analyzes it, and compiles it into a communicative report.

FUTURE: The student will evaluate his research work in the next unit. He will consider how he might improve on his research design, given the conduct of his research, and how the class itself might be improved, given the results he achieved with the help of class instruction.

UNIT 18 WORKSHEET R REPORTING RESULTS

At the conclusion of your research, you have compiled data with the help of several inquiry methods that may have included behavioral observation, survey, performance testing, cultural analysis, statistical analysis, or even artifactual testing.

The outline below will help you organize your report.

Answer each item below, in the order it is asked, and you will have a completed report. If an item or group of items is inappropriate because you did not do it in your research, omit the answer.

However, this outline may help you do some extra task for your research that you otherwise may have omitted.

I. Your research question about classroom learning:

II. Rationale for research: pre-research cultural analysis

A. Name the persons, places, things, and events that were studied by your question.

B. Where, when, and how were they studied.

C. Why was it important to answer your question as far as cultural improvement is concerned?

D. List some of the more important smaller questions which helped you answer your larger question.

III. How you attempted to answer the question: research design

A. What concepts were you measuring?

B. What were the nominal and operational definitions of the concepts?

C. What methods did you select to conduct your research?

D. What sequence of methodological steps did you follow?

IV. Methodological Steps

A. Behavioral Observation:

1. Concepts to be measured

2. Indicators (behavioral)

3. Rationale (why indicators measure concept)

4. Setting (description of population, location, etc.)

a. written description

b. pictorial description

IV. Methodological Steps

A. Behavioral Observation

5. Technique (Who did you observe and why?
Was it a sample population?
How was the sample chosen?
What method did you use to record observation?
How frequently did you make observations?

6. Narrative (running account of what you did and saw during observations).

7. Observational recording system (reproduce one you used).

8. Tabulation of results

(a) graph

(b) percentages (statistics)

9. Conclusions (use statistics in discussion) based on behavioral observations.

B. Survey

1. What did you want to find out by surveying population?

2. How did your survey questions build on the results of previous methods?

3. What were your survey questions? (list)

4. What was your survey technique? (Who did you question?
Was it a sample population?
Why did you order questions as you did?
Which questions were forced? choice? open-ended? rating? etc.)

5. Narrative (What you did; observations on the meaning of what occurred, descriptions of setting, etc.)

6. Tabulation of survey results

a. graph

b. percentages (statistics)

7. Conclusions (use statistics in discussion)

C. Other Methods

If you used performance testing or artifactual testing, explain:

1. Who or what you tested? Concepts that were tested? Indicators for concepts?

2. How the population or thing was tested?

3. What the criteria for success in performance test was?

4. What the measurement criteria were in artifactual testing?

5. Narrative of each testing situation (running account of what you did and saw).

6. Reproduce performance test outline/artifactual test outline.

7. Tabulation of results

   a. graph

   b. percentages (statistics)

8. Conclusions (use statistics in discussion).

V. Research Conclusions

A. Conclusions about behavioral observation(s) in no more than 3-5 sentences.

B. Conclusions about survey(s) in no more than 3-5 sentences.

C. Conclusions about performance testing, artifactual testing, in no more than 3-5 sentences each.

D. Do your conclusions from the above methods enable you to answer your original question (yes or no).

If yes, what is the answer?

If no, why didn't you get a conclusive answer?

Is there a trend or indication of a possible answer? (If no to above.)

What is possible answer?

VI. Cultural Analysis

A. Why do you believe you got the answer you did, given the population you studied? (For yes or no answer.)

B. If you arrived at a conclusive answer or a trend, how might your results help improve the quality of education?

Why might education be improved?
Where could it be improved?
When could it be improved?

UNIT 18 WORKSHEET R REPORTING RESULTS

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Clarity
   b. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance
   a. Adequacy
   b. Accuracy

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

a. Clarity of concept; definition, statement

(4) - The concept is stated in no more than three words; it suggests behavioral indicators; the nominal and operational definitions are clearly stated and sufficient in explanatory power. The statements are clear.

(3) - Errors in clarity and thoroughness of concept, definition, and statement occur, but the meanings are clear enough to allow correction of basic ideas presented.

(2) - Some major conceptual or definitional element must be added in order to allow for further work.

(1) - The response is inadequate to a degree which calls for tutorial intervention and drill...(in the formulation of questions, concepts, etc.).

b. Coherence in rationale

(4) - The meaning of the answer is logically related to the purpose of the question.

(3) - The meaning of the answer is somewhat vague given the purpose of the question.

(2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

(1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

a. Economy

(4) - The selection of response makes its point with a minimum of words, is not redundant and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

a. Economy (Cont'd.)

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

3. Performance

a. Adequacy of performance

(4) - The thoroughness with which each step is carried out satisfies the scope of the expected data collection.

(3) - There is insufficient thoroughness to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

(2) - The thoroughness of performance is wanting to the degree that it must be repeated.

(1) - The response is inadequate to the degree that tutorial intervention is called for in matters of logical planning and performance of the project steps.

a. Economy (Cont'd.)

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

3. Performance

a. Adequacy of performance

(4) - The thoroughness with which each step is carried out satisfies the scope of the expected data collection.

(3) - There is insufficient thoroughness to satisfy all the needs of the project steps given the purpose of the inquiry, but the research has been conducted towards the logical goal.

(2) - The thoroughness of performance is wanting to the degree that it must be repeated.

(1) - The response is inadequate to the degree that tutorial intervention is called for in matters of logical planning and performance of the project steps.

b. Accuracy of performance

(4) - Each step is carried out accurately.

(3) - There is enough accuracy in research performance to have gathered some useful information; but, the research steps should be repeated, at least in part.

(2) - There is a lack of accuracy in the process and direction of research which warrants repetition of the research step.

(1) - The response is inadequate to the degree that tutorial intervention is called for in instruction of the research methods themselves, and in the idea of following a planned sequence of events.

UNIT 18 WORKSHEET R REPORTING RESULTS

| WORK-SHEET QUES TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| II. A | NA | NA | NA | NA | | NA | NA | | |
| B | NA | NA | NA | NA | NA | | | | |
| C | NA | NA | | | | NA | NA | | |
| D | | | | | | NA | NA | | |
| III.A | | | NA | NA | | NA | NA | | |
| B | | | | | | NA | NA | | |
| C | NA | NA | | | | NA | NA | | |
| D | NA | NA | | | | NA | NA | | |
| IV.A1 | | | | | | NA | NA | | |
| A2 | | | | | | NA | NA | | |
| A3 | | | | | | NA | NA | | |
| $A4_{(a)}$ | | | NA | NA | NA | | | | |
| $A4_{(b)}$ | | | NA | NA | NA | | | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

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AP - Actual Points

PP - Possible Points



32

UNIT 18 WORKSHEET R REPORTING RESULTS

| WORK-SHEET QUES TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| IV. AJ (1) | NA | NA | NA | NA | NA | | | | |
| (2) | NA | NA | NA | NA | NA | | | | |
| (3) | NA | NA | NA | NA | NA | | | | |
| (4) | NA | NA | NA | NA | NA | | | | |
| (5) | NA | NA | NA | NA | NA | | | | |
| A6 | | | NA | NA | NA | | | | |
| A7 | | | | | | NA | NA | | |
| A8 (a) | | | NA | NA | NA | | | | |
| (b) | | | NA | NA | NA | | | | |
| A9 | | | | | | NA | NA | | |
| IV. B1 | | | NA | NA | NA | | | | |
| B2 | NA | NA | NA | NA | NA | | | | |
| B3 | | | | | | NA | NA | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points



32

UNIT 18 WORKSHEET R REPORTING RESULTS

| WORK-SHEET QUES TIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| IV. B4 (a) | NA | NA | NA | NA | NA | | | | |
| (b) | NA | NA | NA | NA | NA | | | | |
| (c) | NA | NA | NA | NA | NA | | | | |
| (d) | NA | NA | NA | NA | NA | | | | |
| B5 | | | NA | NA | NA | | | | |
| B6 (a) | | | NA | NA | NA | | | | |
| (b) | | | NA | NA | NA | | | | |
| B7 | | | | | | NA | NA | | |
| IV. C1 (a) | NA | NA | | | | NA | NA | | |
| (b) | | | | | | NA | NA | | |
| (c) | | | | | | NA | NA | | |
| 2 | NA | NA | | | | NA | NA | | |
| 3 | | | | | | NA | NA | | |
| 4 | | | | | | NA | NA | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 18 WORKSHEET R REPORTING RESULTS

| WORK-SHEET QUESTIONS/ PRO-CEDURES | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | SCORE | |
|---|---|---|---|---|---|---|---|---|---|
| | Clarity | Coherence | Originality | Economy | Suitability | Adequacy | Accuracy | AP | PP |
| IV. C5 | NA | NA | NA | NA | NA | | | | |
| C6 | | | | | | NA | NA | | |
| C7 (a) | | | NA | NA | NA | | | | |
| (b) | | | NA | NA | NA | | | | |
| C8 | | | | | | NA | NA | | |
| V. A | | | | | | NA | NA | | |
| B | | | | | | NA | NA | | |
| C | | | | | | NA | NA | | |
| D | | | | | | NA | NA | | |
| VI. A | | | | | | NA | NA | | |
| B (1) | | | | | | NA | NA | | |
| (2) | | | | | | NA | NA | | |
| (3) | | | | | | NA | NA | | |
| (4) | | | | | | NA | NA | | |

KEY

4 - Good

3 - Satisfactory

2 - Improvement Needed

1 - Inadequate

NA - Not applicable Here

---

AP - Actual Points

PP - Possible Points

UNIT 19 IDEAS AND RESEARCH IN SOCIAL SCIENCE BLUM/SPANGEHL

UNIT TITLE: Evaluating Your Research Experience

Generic skill objectives:

Evaluating the research design and conduct of the research in order to specify ways in which each could be improved.

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Procedural skill objectives:

1. The student reflects on the research design and conduct of his research in order to suggest improvements

Prerequisite procedural skills:

1. Creating research design.
2. Conducting methodological steps of research

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Concepts developed:

evaluation

Prerequisite concepts:

---

Readings and/or required supplemental materials:

See Unit 18

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General description of unit activity (i.e., what the student does):

The student reviews his finished research design and reflects upon the conduct of his research in order to improve both for himself or for others who might want to replicate his inquiry into the question he chose.

Worksheet S will guide the review. The student will complete the worksheet at home and it will be discussed in one of the last classes.

---

Teacher responsibilities and suggestions for instructor:

Strive to bring closure to the semester with this worksheet. Expand on the questions included on Worksheet S. Help the student get an overview of the semester course, and especially his research project, by the conduct of the final discussion.

---

Work to be handed in/evaluated:

Worksheet S

It will be scored according to the criteria of PURPOSIVENESS and SELF-DIRECTEDNESS.

TIME FOR CLASSROOM PRESENTATION/EXPLANATIONS:

TIME FOR STUDENT COMPLETION OF WORK: Homework.

TIME FOR CLASSROOM REVIEW AND ANALYSIS OF WORK: Whole class.

---

How does this unit relate to previous and future work:

PREVIOUS: It enables the student to reflect on his research plan and the conduct of his research.

FUTURE: It helps him formulate better methods for his next experience in research, even where the question might be different (in another course).

UNIT 19 WORKSHEET S EVALUATING YOUR RESEARCH EXPERIENCE

1. What research design might have been more effective in answering the question than the one you used? (Selection of methodological steps, and the ordering of steps.) Why?

2. Were there inquiry methods that you might have used which could have gathered more convincing evidence than you gathered? Why?

3. Were you able to study the persons and events in an objective manner? Or, were field conditions such that reliable objective data was difficult to gather? Why?

4. Did you get the sense of being a social scientist in your field research? Why?

5. If someone wished to replicate your research design, how could he improve upon the conduct of each methodological step to get better results?

6. Now with the experience of having done research, can you reformulate your original research question in a manner that would allow you to do further study? What might that question be?

UNIT 19 WORKSHEET S EVALUATING YOUR RESEARCH EXPERIENCE

APPROPRIATE MEASUREMENT PRINCIPLES FOR WORKSHEET

1. Purposiveness
   a. Coherence
2. Self-directedness
   a. Economy
   b. Originality
   c. Suitability
3. Performance is not applicable to this worksheet task.

OPERATIONAL DEFINITIONS OF QUALITY FOR MEASUREMENT PRINCIPLES

1. Purposiveness

   a. Coherence in rationale

(4) - The meaning of the answer is logically related to the purpose of the question.

(3) - The meaning of the answer is somewhat vague given the purpose of the question.

(2) - The meaning of the answer is not directed to the question; a confusion of the question's purpose or meaning may be present in the student.

(1) - The response is inadequate to a degree which calls for tutorial intervention concerning the nature of the project, its goals, methods, etc..

2. Self-directedness

   a. Economy

(4) - The selection of response makes its point with a minimum of words, is not redundant, and is sufficient to satisfy the purpose.

(3) - The selection of response may be redundant, wordy, and incomplete, but it does point towards a satisfactory fulfillment of the purpose.

(2) - The response must be limited both in length and kind in order to make further work possible.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help the practice of brevity and clarity in statement, and, in the critical thinking skills of inference and judgement.

   b. Originality

(4) - The selection of response shows originality in the statement of ideas to be studied, and in the indicators which will allow collection of evidence to support claim or answer questions.

(3) - The selection of response reflects previous model answers given to class, but is adequate in light of question being asked.

b. Originality (Cont'd.)

(2) - The selection of response is stereotyped to a degree that reflects a lack of seriousness in the attempt to answer questions in an independent manner.

(1) - The response is inadequate to a degree which calls for tutorial intervention to help individual think of personally meaningful responses.

c. Suitability (to purpose)

(4) - The selection of response is appropriate for the nature of the question.

(3) - The selection of response is not exactly suited to the nature of the question, but it demonstrates an attempt to logically respond.

(2) - The selection of response is unsuitable to question posed in a degree that shows misunderstanding of the question.

(1) - The response is inadequate to a degree which calls for tutorial intervention to review student's comprehension of project goals; also, to provide drill exercise in critical thinking skills of analogy, inference, and judgement.

| WORKSHEET QUESTIONS/ PROCEDURES | PURPOSIVENESS | SELF-DIRECTEDNESS | | | SCORE | | |
|---|---|---|---|---|---|---|---|
| | Coherence | Originality | Economy | Suitability | AP | PP | % |
| All answers scored by the criteria of PURPOSIVENESS (Coherence) and SELF-DIRECTEDNESS | | | | | | | |

KEY

4 - Good
3 - Satisfactory
2 - Improvement Needed
1 - Inadequate
NA - Not Applicable Here

---

AP - Actual Points
PP - Possible Points

INVENTORY OF STUDENT PERFORMANCE NAME _____

| WORKSHEET | PURPOSIVENESS | | SELF-DIRECTEDNESS | | | PERFORMANCE | | TOTAL POINTS |
|---|---|---|---|---|---|---|---|---|
| | CLARITY | COHERENCE | ORIGINALITY | ECONOMY | SUITABILITY | ADEQUACY | ACCURACY | |
| A | NA | NA | | | | NA | NA | |
| B | NA | NA | NA | | | NA | NA | |
| C-1 | NA | NA | NA | NA | | NA | NA | |
| C-2 | NA | NA | NA | NA | | NA | NA | |
| D-1 | NA | NA | NA | NA | | NA | NA | |
| D-2 | NA | NA | NA | NA | | NA | NA | |
| D-3 | NA | NA | NA | NA | | NA | NA | |
| E | NA | NA | NA | NA | | NA | NA | |
| F | NA | NA | | | | NA | NA | |
| G | NA | NA | | | | NA | NA | |
| H-1 | | NA | NA | NA | NA | NA | NA | |
| H-2 | | NA | NA | NA | | NA | NA | |
| H-3 | | NA | NA | | | NA | NA | |
| I-1 | | | | | | NA | NA | |
| I-2 | NA | NA | | | | NA | NA | |
| I-3 | NA | NA | | | NA | N | | |
| I-4 | NA | NA | | | NA | | | |
| J-1 | NA | | NA | | | NA | NA | |
| J-2 | NA | NA | NA | NA | | NA | NA | |
| J-3 | NA | | NA | | | NA | NA | |
| J-4 | NA | | NA | NA | | NA | NA | |
| J-5 | NA | | | | | NA | NA | |
| K-1 | NA | | | | | NA | NA | |
| K-2 | NA | | | | | NA | NA | |
| L | NA | NA | NA | NA | | NA | NA | |
| M | | | | | | NA | NA | |
| N | | | | | | NA | NA | |
| O | | | | | | | | |
| P | NA | NA | | | | | | |
| Q-1 | NA | | NA | NA | | NA | NA | |
| Q-2 | NA | | | | | NA | NA | |
| R | | | | | | | | |
| S | NA | | | | | NA | NA | |

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GLOSSARY/INDEX

behavioral observation: an inquiry method of the social sciences whereby
(Unit 5) human and non-human behavior is described and recorded.

cause: one phenomenon may be said to be the cause of another if it precedes
(Unit 17) it in time priority, is strongly associated with it in experience, can be shown to have a non-spurious relation to it, and has a rationale that makes it plausible.

civilization: the body of practices, laws, knowledge which helps individuals in
(Unit 1) a society order their lives.

concept: a term (one or several words) used by social scientists to refer to
(Unit 8) an idea they wish to study.

controlled experiment: an experiment in which the number of variables is
(Unit 11) limited by the experimenter in order to allow him to specify cause.

correlation: a strong relationship between two variables established by
(Unit 17) statistical analysis; it may indicate that the two variables are causally related.

criteria: (for definition, measurement, etc.): a standard, rule, or test
(Unit 8) on which a judgment can be based.

crosstabulation: a table displaying the relationship between two variables.
(Unit 10)

cultural analysis: studying the language, art, religion, and other folkways
(Unit 5) of a culture in order to understand the background for human behavior.

cultural analysis (pre-research): enables you to express basic beliefs and
(Unit 6) knowledge that you have already concerning the social world of your research interest.

cultural analysis (post-research): allows you to interpret your data, and
(Unit 6, 18) in some cases establish the cause of what you investigated; it also allows you to make some inferences about the social importance of what you find in your research.

data: information gathered by an inquiry method which is thereby organized
(Unit for analysis.
2)

discipline: the sub-field of a major division of knowledge which uses methods
(Unit 1) of inquiry other fields in that division use.

evaluation: a systematic judging, by criteria, of the results of the research
(Unit 19) steps, and the process of conducting each step.

evidence: the data on which a judgment or conclusion may be based; facts which
(Unit 3) serve to substantiate an idea held by the researcher.

experimental setting: (Unit 11) a situation which would not occur naturally; one that has been arranged by the scientist in order to study behavior in a scientific manner.

fact: (Unit 3) something that has been described and recorded with sufficient thoroughness to permit objective verification by another person.

human behavior: (Unit 1) the overt actions and cultural artifacts of humans in society.

indicators: (Unit 9) the observable characteristics of a concept.

inquiry method: (Unit 5) a formal system of research distinctive to a division of knowledge, or a discipline within the division, which can be used to gather data needed to answer a question or prove a proposition.

knowledge: (Unit 1) the acquired understanding of civilization now grouped as humanities, social sciences, natural and physical sciences.

law (principle): (Unit 2) a rule established by generalizing from the facts discovered in research; a generalized description of phenomena.

maximum: (Unit 12) highest value a variable takes.

measures of central tendency: (Unit 12) a collective way to refer to mean, mode, and median.

mean: (Unit 12) the arithmetic average, which is the sum of all the scores divided by their number.

median: (Unit 12) the category or value above and velow which 50 percent of the total frequency lies, or the middle category dividing the distribution into two equal parts.

minimum: (Unit 12) lowest value a variable takes.

mode: (Unit 12) the value that occurs most frequently in a frequency distribution.

naturalistic setting: (Unit 11) everyday situations which have not been manipulated or changed by the scientist, in which behavior is scientifically observed.

nominal definition: (Unit 8) a statement which tells people exactly what a term will refer to in the research.

non-participant observer: (Unit 9) an observer who preserves objectivity by not becoming subjectively involved in the events he describes.

objectivity: (Unit 2) reality based on observable, thus potentially measurable phenomena; also, an attitude on the part of the researcher to try to describe observable reality without bringing subjective biases into the observation.

operational definition: (Unit 8) specifying the observable procedures--the operations--which a researcher must employ to identify or measure the concept.

opinion: (Unit 3) a belief or conclusion held with confidence, but not substantiated by positive knowledge or proof.

physical tests/measurements: (Unit 5) analyzing physical artifacts and measuring physiological signs.

physical trace evidence: (Unit 11) physical remains or trace of some activity.

population (universe): (Unit 10) the largest number of individuals or units of interest to the researcher.

prediction: (Unit 2) inferring a future occurrence on the basis of observed regularities in a phenomenon.

quantification (to quantify): (Unit 9) assigning things a numerical value in order to measure them, and use the results in analysis.

quasi-experimental setting: (Unit 11) settings which occur naturally, but where some conditions have been altered by the experimenter.

questionning: (Unit 4) the systematic positing of questions each of which elicits a different kind of search, and gathering of facts, which can answer the larger question which guides the research.

range: (Unit 12) the spread of values a variable takes.

recording system: (Unit 9) the systematic method by which one records data gathered in inquiry; a recording system enables one to preserve data in a form which allows the data to be validated.

research: (Unit 2) systematic inquiry into a question.

researchable question: (Unit 13) a question that contains two or more concepts which when measured can produce data to answer the question; a researchable question that is well-formulated suggests how one may make inquiries (ie. measure) into the question.

research design: (Unit 14) the selection and ordering of inquiry methods which will be used in order to answer the question or test the proposition.

sample: a part of a population studied in the research.
(Unit 10)

scales: a method for quantifying and measuring a variable.
(Unit 9)

social science: the study of human behavior.
(Unit 1)

statistical analysis: collecting, organizing, and interpreting numerical
(Unit 5) data.

subjective (subjectivity): allowing one's personal feelings, beliefs,
(Units 2 and 9) biases to influence the collection and analysis of data.

survey (interview): interviewing people to determine their attitudes
(Unit 5) and opinions.

testing performance: measuring the mental, emotional, and physical
(Unit 5) performance of human and non-human subjects in a structured task or environment.

variable: a measurable dimension of a concept.
(Unit 8)